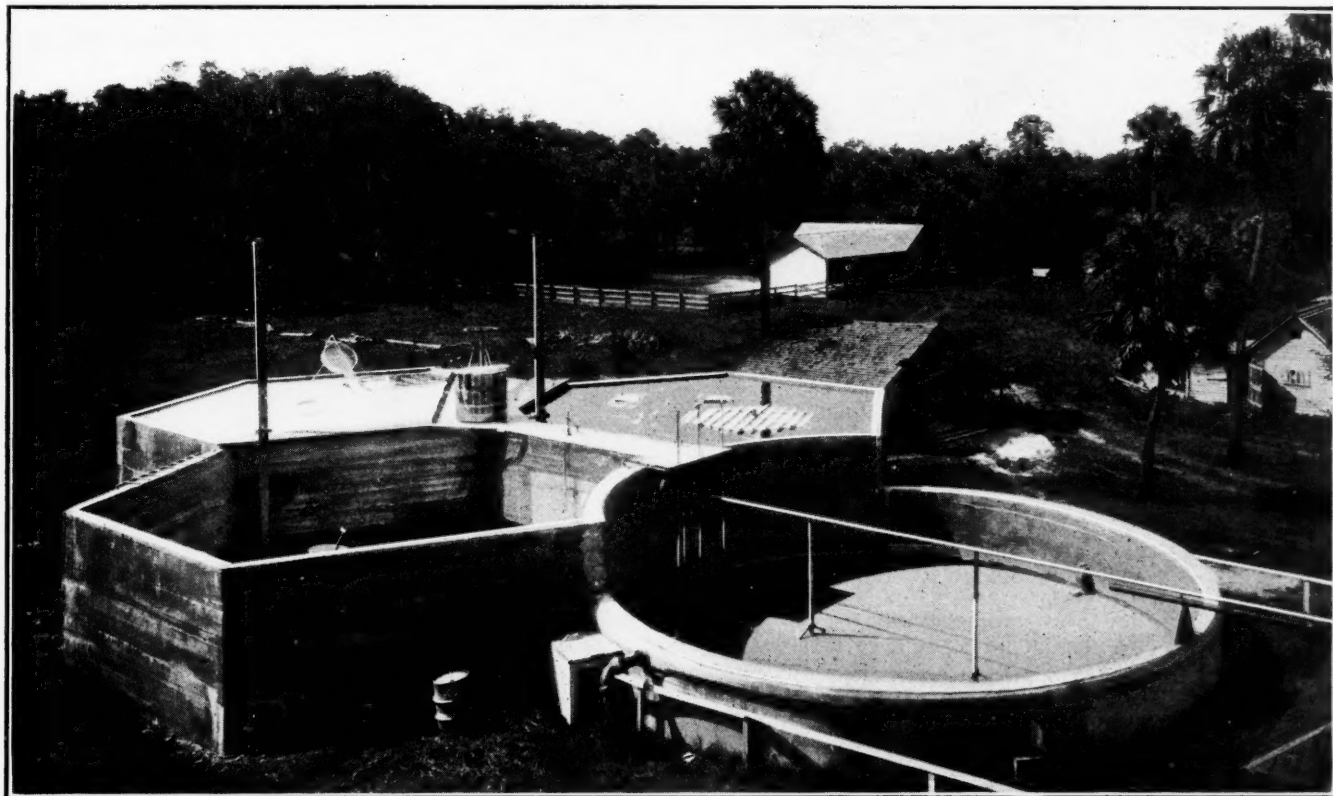


Municipal Journal

VOLUME XXXI

NEW YORK, OCTOBER 11, 1911

No. 15



TANKS OF WATER SOFTENING PLANT OF DAYTONA, FLA., WATER WORKS

DAYTONA MUNICIPAL WATER SOFTENING PLANT

Small Plant for Treating Very Hard Water — Tanks Operated on Intermittent Plan — Aerating Fountains — Compressed Air Agitation—Chemicals Used—Method of Operation—Results Obtained

By GEO. A. MAIN, B.S., M.E., SUPERINTENDENT OF CITY WATER WORKS

THE Daytona municipal water works plant was completed and put into operation two years ago. The demand for adequate fire protection was the chief factor in bringing about its construction. There were some who admitted that the water under a fair pressure would be useful for street and lawn sprinkling and for flushing purposes; but they were equally certain that practically all the consumption would be for these and for fire protection purposes, which would not be sufficient to warrant securing a quality of water adapted to all domestic requirements.

The chief ground for this belief was the fact that Daytona is made up largely of well-to-do Northerners who spend only the winter months here. Practically all of their residences were equipped with private water systems in duplicate. Each residence has its artesian well. The water from these wells will flow by its own pressure into first floor fixtures; and their head of 12 feet or so is ample to drive small rams with which to fill elevated tanks with the hard or the soft water.

The waters from various wells vary in hardness, but practically none of the well waters are suitable for bathing and

laundry purposes, and rain water tanks and cisterns were depended on for soft water. The cost of the water supply was considerable when interest, depreciation, and cost of upkeep of these double systems were all taken into account.

However, residences were generally equipped with these hard and soft water outfits and it was an open question whether there would be a real demand for the city water for domestic uses, since the only feasible source of supply for a city water works seemed to be the artesian wells.

It is worthy of note that, in spite of these somewhat peculiar local conditions, the patronage had reached a number which was very gratifying to the promoters of the municipal plant before the birth of the proposition for softening the city water. As tanks and rams gave out the city water began to take the place of the hard water supply. New houses put city water in for all uses except those for which rain water outfits were still being installed; for all agreed that the city water, like their own well waters, was unfit for use with soap.

The proposition to soften the city water got its start when, at the annual convention of the American Water Works Association at New Orleans, in 1910, Mr. W. F. Monfort, chemist, of St. Louis, gave the writer some facts as to the soap saving which would result if the lime-soda softening process should be applied to Daytona water. For the final installation of the softening plant Daytona is deeply indebted to one of its winter residents, Mr. T. A. Snider, of ketchup fame, and to other influential tourists and citizens who materially assisted the Board of Public Works and the writer in overcoming apparent obstacles to its installation.

INTERMITTENT SYSTEM

In adopting the intermittent method of softening plant operation we have departed from the plan now employed in several other municipalities; but this method seems to have proven its adaptability to our conditions.

Directly back of the pumping station and almost entirely above the ground level is a circular reservoir, 36 feet in diameter and 6 feet deep. This reservoir was a part of the original construction and was used as a receiving basin for the raw well water. The 6-inch pipes from the four 6-inch wells were connected to this basin and 10-inch suction pipes led from this basin to the two pumps. In its passage from the wells through this open basin to the pumps a portion of the hydrogen sulphide gas, with which nearly all of these flowing well waters are laden, escaped from the water. This reservoir now serves the purpose of a clear soft water collecting basin. Well connections to this basin still remain as at first and in case of necessity it can be used as originally planned.

Back of this circular reservoir there have been constructed three hexagonal reinforced concrete reservoirs, 36 feet in greatest diameter and 9½ feet in least depth. Each of these new reservoirs is independently connected to the circular reservoir by 8-inch cast-iron pipes fitted with gate valves located inside the circular reservoir and operated from the platform above. These pipes are laid on a level with the bottoms of the new reservoirs and serve as clear water draw-off pipes. The bottoms of the new reservoirs are 6 inches above that of the circular reservoir. These three hexagonal reservoirs are all equipped precisely alike as intermittent agitating and settling basins. Their combined capacity is 180,000 gallons, 150,000 of which is effective. In the views the south reservoir is being agitated, the dipper-like draw-off pipe being held above the water during this and the settling process. The west reservoir is full of clear soft water, the draw-off pipe having been lowered into the water ready for passing on into the clear water basin and thence into the system. The east reservoir has just been emptied and is refilling through the fountain. At the height of the season it is estimated that these three reservoirs can be filled, agitated, settled and emptied twice a day. This will make the total capacity of the softening plant 300,000 gallons per day.

Floating Raw Water Aerating Fountains.—Turning to a description of the several parts of the softening plant in the order in which they come into play in operation, the first to be

considered is the aerating apparatus. Raw water enters the new reservoirs through the walls near the bottoms. Two 5-inch elbows connected by a short nipple produce a swivel joint at this point. The raw water then passes through a 5-inch pipe 18 feet long to another similar swivel joint which is suspended under a hexagonal wooden float 9 feet in diameter. The water passes up through the center of this float in a cone-shaped fountain, splatters on the float and runs off into the reservoir practically free from the hydrogen sulphide gas. The two swivel joints in the raw water supply pipes allow the float to rest always in a horizontal position and to rise and fall with the water level. The flow from these wells diminishes very rapidly as water in the tank rises and the opposing head increases. This arrangement, therefore, allows the wells to be used to their full capacity, whereas a permanently elevated fountain would flow a uniform, but smaller stream and would necessitate more wells. The inflow from these fountains is automatically cut off when the reservoirs are within a few inches of full.

The tall, box-like affairs with which each reservoir is equipped contain tell-tale rods graduated in 100-gallon divisions and provided with floats at their lower ends. They enable the operator to read at eye-level the contents of the reservoir. The difference between the readings at the lowest and the highest points gives the influx of hard water, a figure required for the correct proportioning of chemicals.

The Slaking Tank.—The cypress tank shown at the junction of the three reservoirs has an outlet into each. Rock lime is placed in the tank and slaked, the necessary stirring being done by the hand wheel and a revolving paddle.

As soon as agitation is set up in the reservoir the milk of lime is run into the agitated hard water. This is followed in about ten minutes by a solution of soda ash dissolved in the same tank and similarly led into the hard water.

Compressed Air Agitation.—In the matter of agitation we have adopted a plan which is in use at the softening plant of the E. O. Painter Fertilizer Co., Jacksonville, Fla. At our pumping plant two 50-horsepower gasoline engines driving two 750-gallon triplex pumps pump the water into the 75,000-gallon elevated tank. The pumping is hence done intermittently and the runs are of about 1½ hours' duration. During the run, while one reservoir is being emptied and its contents pumped to the tank, the engine is at the same time driving a 100-cubic-foot air compressor, the output from which is agitating another reservoir. The compressor is belt and clutch connected to each of the engines and hence may be driven with either unit.

Arranged radially over the bottom of each of the three agitating reservoirs are ¾-inch air pipes with air orifices so arranged on their sides that the exit of the air produces a rotary motion in the water as well as the vigorous vertical currents which are set up by the upward escape of the air. These air orifices are 3/32 of an inch in diameter and number 54 to each reservoir. This air agitation is continued for the entire run or as much of it as is necessary for thorough mixing of the raw water and the chemicals.

Soft Water Outlets.—The 8-inch pipes already referred to as connecting each of the new reservoirs with the original circular reservoir transfer the softened water from the agitating and settling basins to the circular reservoir. The suction ends of these 8-inch pipes are provided with 8-inch elbows connected by short nipples, making swivel joints which allow the suction ends of the drawing-off pipes to be held by floats at the surface of the water, where settling is most complete. During the process of drawing off the water and its gradual lowering, the suction ends of these draw-off pipes remain just below the surface; but as soon as the water has been drawn off to as low a point as is feasible, the suction end of the pipe automatically rises out of the water and remains there until the reservoir has been again filled with raw water and this water softened and settled. After the available time has been given for settling, the suction ends are again lowered for drawing off, as shown in the west reservoir.

Disposition of Sludge.—The reservoir bottoms are given a slight fall toward the sludge outlets. As occasion requires, the sludge valves are opened and the sludge is swept out into ditches provided for the purpose. These ditches are to the southeast of the plant.

CHEMICALS REQUIRED AND RESULTS

Each 1,000 gallons of the well water requires for its purification 2.40 pounds of lime and .67 pound of soda.

The softening has resulted in the removal of practically all lime and magnesium and in a slight increase in the amount of ordinary salt. The increase in the salt is not noticeable and hence has no apparent disadvantages. The removal of the lime and magnesium, however, is decidedly advantageous. It has brought about a saving of from 75 per cent to 90 per cent of the soap formerly consumed where the hard water was used for washing purposes. Even those well equipped with rain water systems were, during dry times, occasionally compelled to use the hard well water for laundry purposes.

The scale deposited in boilers and hot water utensils has been virtually eliminated and the life of these and of reservoirs will be lengthened.

Previous to softening, the algal growth in the original reservoir was so rapid that it necessitated cleaning the reservoir once and sometimes twice a week. This algal growth has now entirely stopped and only an occasional flushing on general principles is now required. It is worthy of note here that the labor cost of these frequent cleanings, not to mention the loss of business due to the displeasing appearance of the slimy algae-laden water, was greater than the interest and depreciation on the softening plant built later.

Perhaps most significant of all the benefits resulting from the softening is the saving in cost of rain water tanks and piping, and the subsequent continual saving in their interest, depreciation and upkeep.

This city, "The Prettiest Winter Resort in the World," is enjoying a rapid and healthy growth. The saving, therefore, resulting to new residences from the installation of the softening plant is not inconsiderable.

We feel that we are in line with a movement that is very rapidly gaining ground and that it will not be many years till the purification of water, including softening where necessary, will be universally recognized as an important branch of water works operation.



GENERAL VIEW OF DAYTONA MUNICIPAL WATER WORKS PLANT

ST. PAUL'S EXPENDITURES

THERE was appointed in the fall of 1909 a Municipal Research Commission to investigate charges of mismanagement made against the government of St. Paul, Minn. This commission has completed its report, which is now in press; and the general conclusions and recommendations were made public at a dinner of the Association of Commerce on September 27. The report states that the commission, in making its investigations, had as its purpose not the prosecuting of any city officials, or even the discovery of graft, but rather the determining whether expenditures were commensurate with income; whether they were made extravagantly or economically, and what remedies could be applied. But it believes that, while the great increase in expenditures does not necessarily indicate corrupt use of the city's funds, lavish appropriations afford opportunity for corruption.

In fact, the commission does not report having found any corrupt use of the city's funds, but it does find that the city is spending money more lavishly than it can afford to do. On this point it states, "While a considerable and increasing revenue is received from licenses and similar sources, yet the fact remains and will remain that substantial increase in expenditures must be met by increased taxation. There is a limit to the amount of taxation which property will bear. Beyond that limit comes confiscation. That the increase in taxation is approaching the limit is easily capable of demonstration. With a tax rate of 3 per cent on the present assessed valuation it takes in many cases three or four months of the gross rent or income to pay the taxes."

From 1900 to 1910 the population of the city increased 31.6 per cent; but during the same period the expenditures increased 8 per cent, and the city tax rate increased 46.2 per cent.

To remedy this condition the commission recommends the creation of a budget commission of non-office holding taxpayers which should annually fix the maximum amount which any department, branch or officer can spend during the succeeding year, with power in the common council to decrease but not to increase such maximum. Moreover, that the charter be modified so as to set a limitation to the amount which can be expended by the general departments for operation and maintenance, such maximum to be either a fixed amount or to be determined by other data such as population or assessed value of taxable property.

"The commission is of the opinion that the accounting system of the city as a whole is antiquated, inadequate and involves a duplication of work. It does not properly check property accounts, including expenditures of materials and supplies. The whole system should be remodelled under expert advice, with care that the new system be not too complicated nor involve too much clerical labor. In this connection attention is called to the fact that the present cumbersome system of auditing and paying accounts for the purchase of supplies and materials involves so much delay and trouble to the merchants as to result in a substantial increase in the prices charged."

The commission is also of the opinion that no adequate system of inspection exists in many of the departments for checking the quality and quantity of supplies and materials purchased. Civil service, and provision for the payment of improvement assessments by property owners in ten annual installments were recommended.

The complete report will contain detailed information of findings concerning the water, fire, school, park and police boards, and a general report on organization and administrative methods.

DEATH RATE IN NEW YORK CITY

THE number of deaths in New York City reported during the nine months ending September 30, 1911 was 58,144, giving a death rate of 15.56 per thousand. This is the lowest rate for the corresponding nine months period since the formation of the greater city in 1898, the nearest approach having been a rate of 16.06 in 1909. The rate during the same period last year was 16.27. The total number of deaths this year was 487 less

than the actual number last year. Of infants under one year of age the total number of deaths this year during the period named was 1,187 less than during the corresponding period of 1910.

STATIONARY POLICE POSTS

IN June last a new system of assignments of patrolmen to night stations was inaugurated in New York City by Police Commissioner Rhinelander Waldo. The new system, which consists practically of retaining half of the force on fixed posts, is an adaptation of a method prevailing in London, England. At first the new plan was tried in a few precincts only, and has been gradually extended so as to cover nearly all of Manhattan Island and part of Brooklyn. There are now 771 fixed posts in Manhattan and 111 in Brooklyn. During the first week in October the plan was applied to a new precinct and 42 new stations added to the list.

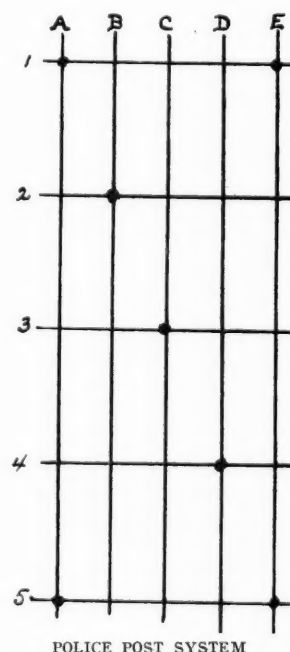
The distribution and duties of patrolman during the day time has not been changed in any way by the installation of the fixed posts at night. The assignments of the traffic squad have also been unaffected.

The New York police force is now operated on the three-platoon, twelve-squad system. The tours of the patrolmen are so arranged that during the hours from 11 p. m. to 7 a. m. there are twice as many men on patrol duty as at other times. Theoretically for every officer on a fixed post there is one patrolman covering the same territory, the two co-operating in various ways. Up to this time these men have been changing places every two hours, but an order has just gone into effect changing the periods of relief to every hour during the winter. This was done in order to relieve the man on the fixed post from the hardship of standing practically inactive for so long a time in cold and stormy weather.

The man at the fixed post is required to remain at a certain street intersection unless called away from it by duty. Generally he stands in the middle of the street, commanding a view of both the street and avenue and in plain sight himself. In fact, one of the chief reasons for the adoption of the new system was to remove the cause for complaints often made that a policeman cannot be found when wanted. The stations are close enough together so that any citizens may at night call a policeman in two or three minutes. The man on the stationary post is not absolutely confined to one spot, but he may not step on the curbstone or go beyond the crosswalks of the intersecting streets. He is held strictly responsible for any disorder or crime within his range of vision (ordinarily two blocks in all four directions) and within range of his hearing. For example, if a pane of plate glass should be broken within the territory covered by his station he would be expected to hear it.

When the fixed-post man is called from his station in the line of duty the patrolman covering his territory notices his absence, if he does not hear his signal on leaving the post, and goes and covers the post until the fixed-post man returns. Of course, this regulation does not prevent the men from cooperating in other ways in emergencies. The main idea, however, is to have the fixed post covered at all times. In cases where the patrolman takes the fixed-post man's position he immediately notifies the officer in command at the station house by telephone.

The theory of the arrangement of fixed posts throughout the city is very simple, as shown by the accompanying diagram. In practice, however, modifications have to be made, due to irregularity of streets, density of population and



local causes. In the diagram the letters represent avenues and the numbers streets. The avenues are intersected by streets at intervals of about 600 feet. The streets are intersected by avenues at intervals of about 250 feet. The stations A1, B2, C3 and D4 form a unit in the arrangement. Stations E1, A5 and E5 are stations of other units in which the men are similarly disposed. The man at C3 is held responsible for conditions on avenue C between 1 and 5 and on street 3 between avenues A and E. Every other man theoretically covers similarly arranged territory. A patrolman, as stated, walks up and down the streets in the same territory.

In this way the city is covered in a way, it is stated at police headquarters, far superior to any other heretofore prevailing. The active force is in closer communication with the station, the streets are more closely watched and there is always a policeman near by who can be found when needed.

AN ARTISTIC ENGINE HOUSE

THERE is located in the west end of Los Angeles, Cal., a fire-engine house which was designed and built with the idea of being ornamental to the residential district in which it is located rather than the reverse. This house is built in a style adapted from the timbered houses of Germany, and is a decided ornament to the neighborhood in which it stands. It occupies a little triangular piece of ground which would be useless for almost any other purpose and which makes it possible for the building to give protection to a residential neighborhood without lowering the value of property "next door."



LOS ANGELES FIRE ENGINE HOUSE.

It seems to solve very neatly the problem of constructing such a public utility in a way that is neither a nuisance nor an eyesore. Such details as a well-tended lawn with flowers, shrubs and trees make it far more attractive than the ordinary engine house.

MAKING WATER RATES.

(From annual address of President Alba L. Holmes before the Central States Water Works Association.)

I wish to impress upon you at this meeting the necessity of each individual city making its own rates, governed by the cost of the water sold, and the avoidance of the system of copying the rates from towns of about the same size, as has been the custom in the past in many localities. The conditions are rarely the same, and equity and justice to all the residents of the city as well as its taxpayers, requires a price list that is fair to all. In every city, whether it be supplied by a private company or owned by the municipality, the cost of operation and maintenance must be borne by the community; and the community is interested, or should be interested, in seeing that every user of water is treated fairly and pays his share of the proper cost for the supplies furnished. The only way that water can be furnished for the operation of machinery is to sell it for less than it costs to furnish the same water for other purposes. This discrimination should be opposed by us, I think, and the rates for this service placed at somewhere near the cost of production. I know that I shall be told that when a plant is running and supplying the other consumers, the

cost of supplying some large factory with water will be but little and that the money is needed for expenses. Why not apply the same theory to taxation, and say that it costs no more to collect the taxes from a large taxpayer than from the smallest, and therefore the larger should have a lower rate?

We must furnish a water beyond reproach in quality, in quantity sufficient for all required purposes, with ample storage to protect against accidents and fires; and we must ask the patrons of this system to provide the necessary means to do this and to take care of the continuance of the system. To do this we must take care of as much of the question of depreciation as is possible each year, and all of the time, so that the plant is kept at its highest state of efficiency and the frequent issue of a bonded indebtedness for repairs will not be necessary. This will require higher rates in the most of the plants than is now charged, but will be what the most conservative business men of the country require of concerns in other lines.

I want to bring up the question of uniform accounting in all of our municipal plants, a feature that has been taken care of in Ohio, but is to be considered in the most of our other States yet. I would urge the most thoughtful attention of all of our members to this very essential feature, to the end that comparisons may have some value in the future. The hoodwinking of the people by the reports in many of our cities, in relation to the handling of our public utilities has been scandalous, and it is time that honest men insist on truthful and intelligent reports from their servants. This is along the line of good business management, and competent and fair-minded officials cannot object to this system.

STREET CLEANING ACCOUNTING

Physical Records of Street Cleaning Service as Important as Financial—Kind and Condition of Pavement and Other Details Essential.

By ERNST C. MEYER, Ph.D., Expert Special Agent in Charge of Statistics of Cities, U. S. Bureau of the Census.

(Concluded from Page 429)

The physical records of street cleaning service are of equal importance with the financial records as a means for the determination of administrative efficiency. Neither the one nor the other is of itself adequate. The financial records, no matter how ably constructed, cannot in themselves provide a measure of the service or utility received in return for an expenditure. Such a measure can be provided only through the maintenance of accurate records of the physical facts of street cleaning and the interpretation of the financial data in the light of the physical data. An effort is made below to indicate what should be the character of these physical records.

For each kind of cleaning, whether machine or hand sweeping, flushing, push-cart patrol or pick-up, the total area subject to cleaning, the number of times the area is cleaned per year and the gross area, or product of these two, should be known. As stated in an earlier number, no city seems to have gone beyond these elementary facts in the publication of information on street cleaning, unless it was in case of special investigations such as were conducted in New York some years ago, or as conducted by Mr. Fetherston, the aggressive superintendent of street cleaning of the Borough of Richmond, N. Y., at the present time.

As demonstrated by the statistics of the Bureau of the Census presented in an earlier issue, these physical facts are not adequate to properly interpret the efficiency of street cleaning service. A number of other important factors must be considered. The kind of pavement subject to cleaning is important. Experiments in New York in 1907 showed that the cost of cleaning granite block pavement is 40 per cent greater than that of cleaning sheet asphalt; and that in the case of cobblestone the increased cost is no less than 200 per cent. On the basis of 100 cleanings per year it was found that it cost

\$211.20 more per mile to clean granite block than sheet asphalt; and no less than \$1,584 per mile to clean equally well cobblestone pavement. It is hence imperative that a city report on street cleaning show the kind of pavement cleaned, its area and the number of cleanings per year.

Another important factor is that of the condition of repair of the pavement subject to cleaning. At first thought this may not appear to be of significance. The New York investigation, however, brought out the fact that it costs 20 per cent more to clean a pavement in "fair" condition, and 40 per cent more to clean one in "bad" condition, than one in "good" condition. In the light of these facts it becomes increasingly evident that the problem of street cleaning is closely related to that of paving. A certain kind of paving may be cheaper to lay, but far more expensive to keep clean, and thus in the end be more expensive than one whose initial cost is somewhat greater. It also would seem to pay a city well to keep its pavements in good repair. It was estimated that the Boroughs of Manhattan, The Bronx and Brooklyn, in which much "bad" and "fair" paving was found, might have saved themselves annually \$374,000 in expenses of street cleaning had they maintained their pavements in good condition.

Another factor that must be shown in the city report is the proportion of the cleaned area lying in the business and in the residence sections of the city; for the work of cleaning, because of volume of travel, disturbance in the work and for other reasons, is more expensive in business sections.

Likewise is exact information of the local police regulations relating to the littering of streets by vehicles and the scattering of the wastes of building activities and the thoroughness of their enforcement an important factor, which increases or decreases the cost of cleaning.

Information as to the extent of the duplication of cleaning is likewise required. The investigations of the Bureau of the Census have revealed that in cities of over 30,000 almost the entire area of streets subject to cleaning is cleaned by two methods, sweeping and flushing; or both kinds of sweeping, hand and machine; or combinations of these. The exact area of such duplications should be shown.

Other elements of importance are the types of machines used for each kind of pavement; the amount of sprinkling done prior to sweeping; the length of tracks of streets or steam railways traversing streets subject to cleaning; and the amount of wages paid.

For the interpretation of the accounts showing the expenses of disposing of street sweepings information is needed as to the length of haul, the methods of disposition, the character of sweepings; the amounts removed from paved and unpaved streets, etc.

In case of gutter cleaning, scraping, fall and spring cleaning, snow and ice removal, cleaning of public alleys and other odd jobs, detailed information is required to explain the expenses shown by the accounts covering each of these classes of cleaning.

Accurate records should also be kept of the number of men employed, and the number of horses and the kind of equipment used in the various classes of work.

In order that the results obtained from contract work may be compared with similar results from work done by the city, it is necessary that accurate records of the physical facts of contract service be maintained.

The various physical records which have been suggested should be constructed with a view to giving expression to the same units which have been incorporated in the accounting scheme. Little of value can be gleaned from accounts which show the cost of each kind of street cleaning when the physical records of areas cleaned are kept as a total for all forms of cleaning only. To know that \$5,000 were expended for sweeping by hand without knowledge of the amount of such sweeping done is obviously of little use.

The key to proper physical records is an efficient method of daily report of work done made by the foremen or inspectors in charge of squads. The information contained in the daily

reports should then be promptly booked in practical form. The bookkeeping of the physical data is an art as important as that of the bookkeeping of the financial data. Unfortunately, our cities do not very generally regard it as such. In fact, few city officials seem to have awakened to the significance of accurate records of physical data.

The correlation of the information revealed by these two kinds of records, that is, the juxtaposition of the financial fact of unit cost with the physical fact of unit service rendered for such cost, is an art by itself. It is the art of reporting. It is the art of measuring the efficiency of the administration of the public service. A report is essentially an informational document. That is its *raison d'être*. No other reason or excuse exists for its publication. If this be true, numerous public "reports" of to-day are misnamed. Most of them are mere records of cash paid out, mostly summaries at that, with general information which frequently lacks relevancy, or is presented in such voluminous but meaningless detail as to confuse the public and conceal the financial data. Concise efficiency studies are rare. Without these the public gropes in the dark. Proper light can be thrown on public administration best through the publication of clear, brief studies in efficiency as made possible by the maintenance of financial and physical records such as have been suggested.

That the form of these records should be uniform as between cities has been emphasized and reiterated again and again. Uniformity is the fundamental requisite of public records designed to provide measures of administrative efficiency. Governments do not possess absolute standards of administrative efficiency by which they may measure the results obtained at any one time, as the temperature of their climate may be measured by the absolute standard of the thermometer. Public administrative efficiency is a relative conception. The existing public concept of the scope of governmental action provides the general limits of administrative action. Its detailed efficiency can, however, be estimated only on the comparative basis of results attained by governmental bodies exercising similar functions, such as comparing cities with cities with reference to their detailed departmental activities. This elementary fact seems to be very generally lost sight of by public accountants who install new systems of accounts in cities. Whatever the merits of their plans, unless they will learn to merge individual differences in views in some mutually acceptable system, at least as to fundamentals, the systems which they install will continue to fail in their most essential requirement—uniformity—through which alone the records can be made to yield the statistical information in such form as is required for the measurement of the efficiency of the administrative service of any one city—and that, it would seem, is the final object of an accounting system which proposes to be anything more than a cash account. Once let the public grasp this idea and public accountants will be compelled to develop their systems with a view to uniformity. It would, however, seem to be far more creditable to the profession if a change in policy proceeded from within rather than from without.

Without doubt the standard form of accounts which has been presented in this series of articles is open to numerous improvements. That fact, however, does not militate against the adoption of a better system by such cities as may possess real interest and understanding for the larger significance of an accounting system which is an index to administrative efficiency and economy. It would be highly unfortunate, however, if cities should proceed in this work independently and without cooperation, thus introducing modifications in a general plan which would tend to defeat the main results sought from its adoption. Uniformity is paramount. All views should be freely expressed and every effort should be made to adjust differences. The ardent hope is expressed that efforts in this field may come to early fruition in recognition of the fact that there are, fundamental to all which is desired from efficient street cleaning, great economic facts and vital forces of administrative action which must be analyzed and understood and controlled.

Municipal Journal

and Engineer

Published Weekly at
239 West Thirty-ninth Street, New York
By Municipal Journal and Engineer, Inc.
Telephone, 2046 Bryant, New York
Western Office, 1441 Monadnock Block, Chicago

S. W. HUME, President
J. T. MORRIS, Manager. A. PRESCOTT FOLWELL, Secretary
A. PRESCOTT FOLWELL, Editor
F. E. PUFFER, Assistant Editor

SUBSCRIPTION RATES

United States and possessions, Mexico, Cuba.....\$3.00 per year
All other countries..... 4.00 per year
Entered as second-class matter, January 3, 1906, at the Post Office
at New York, N. Y., under the Act of Congress of March 3, 1879.

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OCTOBER 11, 1911

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For Efficiency in Street Cleaning

IN this issue we print the last of the installments of Mr. Meyer's paper dealing with Street Cleaning Accounting, and the one of most interest and importance to the street cleaning superintendent and department. We urge all who are interested in street cleaning to read carefully this and the preceding installments and send us any comments, favorable or otherwise, which they may have to make upon them. This is extremely important, since it is probable that the Census Bureau, in its next publication of Statistics of Cities (of which Mr. Meyer is in charge), will use the forms therein set forth or suggested, unless some improvements on these be forthcoming.

We understand that Mr. Meyer does not claim or believe that the forms suggested are the best which can be devised. But *some form must* be used; he asks the cooperation of all interested officials in developing at the outset the best possible; and if they will not help, he must rely upon his individual judgment and information. If the resulting statistics, as collected by the Census Bureau, are then criticised as to form, the officials who, having the information and ability to improve them, fail to do so at this time, must bear a share of such criticism. One or two suggestions have already been received, but we earnestly hope for assistance from officials in every city in the United States.

Bituminous Pavement Definitions

THE sub-committee on Bituminous Paving Nomenclature of the American Society of Municipal Improvements at its September convention reported for adoption definitions of the terms "sheet asphalt," "bituminous concrete," "bituminous macadam," and "oiled or tarred macadam." It may be remembered that MUNICIPAL JOURNAL some months ago published several opinions concerning the exact meanings which should be attributed to these several terms, or in some cases suggestions of other terms which should be substituted for them. It seems to us that the definitions prepared by this committee, and which are given below, should find general acceptance and we hope that such will be the case. These definitions are as follows:

Sheet Asphalt, the well-known pavement commonly called by this name, normally consists of two layers; the first, a binder course of broken stone, coated with asphaltic cement; the second layer, a mortar wearing surface of graded sand and mineral dust cemented together with an asphaltic cement. It is generally but not necessarily a two-layer pavement deriving its lateral stability principally from the binder course or foundation and what may be termed a surface stability from the correct grading of sand in the second layer or wearing course aided by the cementing quality of the asphalt. It is commonly laid on a hydraulic concrete base but may be supported on a macadam base.

2. *Bituminous concrete* is a pavement consisting of a combination of broken stone and sand, or fine mineral matter, cemented together with a bituminous cement, and which has all its ingredients mechanically mixed before being laid. To be termed a bituminous concrete it must partake of the well-known characteristics of concrete, that is, there must be stone enough in its composition to form an important part thereof and add to its strength and durability; also there must be enough of the mortar constituent, that is, the sand and bituminous cement, to properly support and bond together the largest particles. It is normally a one-layer pavement, all parts of it having equal stability, due both to the structure of stone and the bond of the bituminous cement, and depending on the base for vertical support only. It may or may not be finished with a skim coat and top dressing of sand or stone chips. It is adapted to be laid on either a hydraulic concrete or macadam base which may or may not have a light coat of bitumen to increase the adhesion.

In the paving mixture, gravel may wholly or in part be substituted for crushed stone, and fine crushed stone for sand. Mineral dust also may be added to increase the density and stability of the mixture.

3. *Bituminous macadam* is a pavement consisting principally of crushed stone which retains its integrity of structure mainly by the mutual support of the various particles of stone, aided by the slight bonding value of the fine mineral matter in its composition, and protected from surface disturbances by an upper bonding layer of bituminous material. It is a one layer pavement and there is no definite distinction to be made between the wearing surface and the base, as in their nature they must be knit together in one structure. Practically all the horizontal stability as well as vertical support is from the macadam base. The pavement may be produced by adding the bituminous top to the macadam base by either the penetration method or the mixing method. In the former the bitumen is applied in a liquid state and a top dressing of stone or sand is spread over the surface and thoroughly rolled. In the latter the bitumen is mixed with the mineral, consisting of comparatively fine stone or sand, or a mixture of both, and forced into the macadam body of the pavement by rolling. In either case, whether the penetration or mixing method is followed, the macadam base must be specially prepared, with voids in the upper portion into which the bitumen or bituminous mixture penetrates, leaving a coating of the desired thickness over the surface.

4. *Oiled or tarred macadam* is a macadam or telford pavement, treated with a comparatively light coat or coats of oil or tar for the purpose of laying dust and preventing surface disintegration. It merits the name of bituminous pavement only when the oil or tar supplies a bitumen of a practically permanent bonding nature to the surface of the macadam.

In view of the advancing state of the art of paving it can hardly be expected that the nomenclature will be accepted as finally conclusive. Variations of the above mentioned forms of construction may be devised which are combinations of any two and the results indicated may be obtained by other means. For instance, a bituminous macadam may be made by forcing the bitumen up into the stone of the wearing surface from below under the roller instead of from above downwards; but nevertheless it is a bituminous macadam. An attempt has been made to classify only the more widely accepted forms of construction, and that the reasons for the classifications may be understood, it was thought proper to attempt a definition of each class. The term "bitumen" is used in its broadest sense, meaning all hydrocarbon products suitable for use in pavements, no matter from what source obtained. Likewise "asphalt" is taken to include all so-called natural asphalts, oil asphalts, and other similar petroleum products that may be used as binders.

No new or unfamiliar names have been given to the various classes of pavements, but only those offered which have already by usage attached themselves thereto, or which seemed most nearly descriptive of the pavement.

PAVEMENT CROWNS AGAIN

Editor Municipal Journal and Engineer,
239 West 39th Street, New York.

Dear Sir.—The following is in reply to the publication in your issue of May 10, 1911, under title "Pavement Crowns in Washington," of a paper of Mr. T. J. Powell before the American Society of Civil Engineers, published in their proceedings of that society, March, 1911. Mr. Powell's paper is especially interesting to me as it corrects an impression I had that prior to my paper before the American Society of Municipal Improvements at their convention in Little Rock, November, 1909, there had been no publication or generally accepted rule providing for less crown on steep than on flat grades. In my observation and experience this important point in establishing crowns on steep grades is quite generally overlooked. At the opening of my Little Rock convention paper I said:

"At the outset, he begs to plead for a less frequent use of algebraic formulas to express simple engineering propositions, which could be more clearly stated in plain English."

Mr. Powell's paper, while being most excellent from the point of view of technical engineers with sufficiently high education in mathematics to calculate results from the elaborate formulas, is on account of these formulas absolutely unintelligible to nearly all superintendents, foremen and inspectors in actual charge of practical street pavement construction who are generally given grade stakes by the engineer showing the grade for the top of the curb and left to "work out their own salvation" with "tees" and "horse sense" in the matter of establishing grades for the crown.

It seems to me that the Washington Formula given by Mr. Powell is seriously faulty in that it makes no distinction in necessary or desirable crowns of—

(1) Smooth surfaces such as asphalt, creosoted block, thoroughly vitrified and grouted brick pavements, etc., and—

(2) Comparatively rough surfaces affording a better foothold, such as granite blocks, soft bricks (which readily wear at the edges and thus provide foothold), bitulithic, macadam, etc.

It may be valuable to repeat here the writer's "plain English" rule given in his Little Rock convention paper.

"For pavements having smooth surface, such as asphalt, creosoted blocks, and grouted stone blocks and brick, and having grade of two per cent. or less with no car tracks, make the crown one (1) inch to each six (6) feet width between curbs.

"For pavements providing more secure foothold, such as stone blocks and brick having bitumen filled joints; macadam or bitulithic, on streets having a two (2) per cent. or less grade, make the crown one (1) inch to each four (4) feet of width.

"If street has car tracks, deduct the total width outside to outside of rails from the width between curbs and divide the

difference (double width between track and curb) by six and four respectively.

"For grades between two (2) per cent. and four (4) per cent. provide one-half the crown provided by the above computation.

"For grades above four (4) per cent. provide a crown one-third that of the above computation.

"Provide one-third of the lateral fall between the crown and the quarter and two-thirds between the quarter and the curb. By "quarter" is meant the point midway between the center of the roadway and the curb, or in the case of car track streets, the point midway between the outside rails and the curb."

Covering "mid-quarter" points (between curb and quarter and between quarter and crown respectively) in a communication of the writer which was published subsequently in several of the engineering papers, the following addendum was given following suggestion of Mr. G. B. Zahniser, C. E., of New Castle, Pa.

"1st, drop 1/8 the crown at the crown mid-quarter point,

"2nd, drop 1/3 the crown at the quarter point,

"3rd, drop 5/8 the crown at the curb mid-quarter point."

The writer's rule, thus amplified by Mr. Zahniser, gives the following on a nearly flat street with roadway 80 feet wide between gutters on streets having no tracks:

"Crown 20 inches above gutter.

"1st, drop 1/8 of the crown at the crown mid-quarter point 2 1/2 inches below the crown.

"2nd, drop 1/3 the crown at the quarter point, 6 2/3 inches below the crown.

"3rd, drop 5/8 of the crown at the curb mid-quarter point, 12 1/2 inches below the crown."

The following table of comparison of the crown and quarter points for a roadway 30 feet between curbs, obtained by the use of the Washington, D. C., "formula" and the writer's "rule" is interesting:

Grade	WASHINGTON, D.C., FORMULA			G. C. WARREN'S RULE SMOOTH PAVEMENTS			G. C. WARREN'S RULE ROUGH SURFACE PAVEMENTS		
	Inches Crown	Rise at Quarter	Feet Width for Each Inch Crown	Inches Crown	Rise at Quarter	Feet Width for Each Inch Crown	Inches Crown	Rise at Quarter	Feet Width for Each Inch Crown
Flat.....	5.7	3.8	5.25	5	3.3	6	7.5	5	4
2%.....	5.1	3.4	5.9	5	3.3	6	7.5	5	4
4%.....	4.3	2.8	7.0	2.5	1.67	12	3.75	2.5	8
10%.....	1.9	1.27	16	1.67	1.1	18	2.5	1.67	12
25%.....	0	0	0	1.67	1.1	18	2.5	1.67	12

It should be noted that between the Washington formula and the writer's rule for "smooth" pavements there is very little practical difference except in the one item of 4 per cent. grade and in that the writer believes that his rule of 2.5 inch crown on such steep grade gives a very much safer foothold and in every practical sense is fully as satisfactory as the Washington formula of 4.3 inch crown.

As noted above, the writer believes that the failure to modify the crown for smooth and comparatively rough surfaces is a serious one. The object of the crown is to provide good drainage and, in so far as is practicable, to still provide a safe foothold for horses; for drainage, pavement crowns and grades should be as great as possible. When the pavement surface is of sufficiently rough character to give a better foothold it should have a greater crown, not only because it will safely stand the higher crown, but to overcome the fact that roughened surface conditions which provide the superior foothold also tend to retard the flow of water from the surface. From the Little Rock convention paper the following is quoted:

"Water is the great enemy of all forms of pavement and unless the crown is sufficient to readily carry the water from slight depressions, which are necessarily to some extent in the surface of every pavement, the durability of that pavement is very greatly reduced."

It is worthy of note that while the formula of the Washington Engineering Department is intelligible only to the mathematician, it covers nearly as much space in print as the writer's "plain English rule," and at the same time the formula requires very much more and more complicated calculation to arrive at results.

Very truly yours,

GEORGE C. WARREN.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Claims to Have Laid Best Roads in State

Toledo, O.—With reference to the river road from Toledo to Maumee, Commissioner Davis said "it will be the best piece of paving in the State when it is completed. The increased cost over the original contract will be more than made up by the kind of road we will have. We started to build the road on plans of the old board for a water-bound macadam road. The estimate was \$22,000. We thought, however, that since we were going to do the work ourselves we could tar-bind it without increasing the estimate. The \$6,000 transfer to this road fund which we made last week was occasioned by the fact that we are making the road even better than we intended. It is an asphalt-bound macadam road, considerably more expensive than tar bound and a great deal more expensive than water bound. Besides, we had to curb and grade the Delaware hill, not included in the estimate." Of the paving, which is four miles long, about 8000 feet remain to be completed, and Mr. Davis said the job will be done in about 15 working days.

Drought Helps Good Roads

Tulsa, Okla.—Farmers of Tulsa county who suffered from the drought of the past summer are interested in a special election to be held during the week to vote \$600,000 in bonds for road improvements. Advocates of the movement have promised that if the bonds carry, contracts will be so let that these farmers may obtain employment at road building. The passage of the bonds will make a total of \$1,000,000 available in the county for good roads.

Want Million Dollars for Northern Minnesota Roads

St. Paul, Minn.—Five petitions calling for the construction of approximately 492 miles of roads in northern Minnesota, presented by the Northern Minnesota Development League, will be considered by the State Highway Commission at its next meeting. These petitions are the direct result of the good-roads mass meeting at Bemidji last summer, when a movement was launched to expend \$10,000,000 for good roads in that section of the State. At the estimated cost of \$2,000 a mile, these five projected roads call for the expenditure of \$984,000 as the initial outlay in the good-roads movement. If approved by the commission it will be the first time in the history of the State that so large an expenditure for such a purpose has been authorized.

Nearly Half Million Spent for Improvements

Council Bluffs, Ia.—With a total of approximately \$300,000 worth of paving, sidewalks, sewer and combination curb and guttering either ordered or completed during the first eight months of the year 1911, the period exceeds all records for public improvements of this nature during the history of the city. Paving heads the list of the improvements with a total of no less than 123,000 square yards, the total cost being approximately \$246,256.18. The paving is all of Galesburg brick with concrete foundation of varying thickness, depending upon the nature of traffic over the street. Of this sum a considerable portion will not be completed during the current year. Sidewalks came second in the list, with a total of approximately 250,000 square feet, the contract cost being \$35,236.50. Sewers that will total in cost \$8,271 have been ordered or constructed and combination curb and guttering to the amount of \$8,829.70 is included in the year's construction.

Ventura Building 16 Bridges

Ventura, Cal.—Ventura County is building 16 bridges, costing approximately \$200,000, most of which, it is expected, will be completed before the flood season of this winter, according to Surveyor E. E. Everett.

Ordinance Provides Against Auto Oil Damaging Streets

Chico, Cal.—In an effort to protect the asphalt streets from being damaged by the gasoline and other oil that drips from automobiles upon the streets, and which causes the decomposition of the asphaltum, the City Trustees have passed a new ordinance. The ordinance makes it a misdemeanor for any person or corporation owning an automobile that does not provide some device for catching the oil and preventing it from spilling on the asphaltum. The violation of this law will make one liable to a fine of \$250, or 90 days in jail, or both. This damage is quite noticeable about the city, where machines have been standing. Another matter in regard to the preservation of the newly paved streets was considered at last meeting of the Trustees. This was concerning the hitching posts about the city. Before the streets were paved people were allowed to hitch any place along the streets where the property owners did not object. It was informally settled at the meeting that this practice would be done away with. It was also stated that public hitching posts would be provided by the city for the accommodation of the farmers.

Road Work Bids Without Advertising

Nutley, N. J.—An ordinance providing for the soliciting of bids on road work without the formality of advertising for them was passed by the Nutley Town Council at last meeting. The resolution was introduced by John Mutch and follows a discussion of several months between some of the members of the Council and Mayor John P. Lux over paying a contractor for road work, which did not satisfy the Mayor.

Paving May Continue Pending Litigation

Grand Rapids, Mich.—According to an opinion handed down by Judge Arthur C. Denison in the United States District Court Contractor E. W. Seamans may continue with the pavement of Barclay street under certain conditions. The opinion is the result of the hearing of a petition of Warren Bros. against the city of Grand Rapids and Contractor E. W. Seamans for a temporary injunction restraining them from continuing with the pavement of the street. Warren Bros. claimed that the surface, which was to be used on the street, was an infringement of a patent substance controlled exclusively by them. The opinion handed down by Judge Dennison denies the petition for a temporary injunction, providing both parties to the suit file bonds with the court within 20 days to provide for the payment of a royalty to Warren Bros. by Contractor Seamans in the event that a later hearing shows this substance to be an infringement of Warren Bros.' patent. The opinion further provides for the payment of damages to the city and to Contractor Seamans in case a later hearing shows that the pavement used is not an infringement.

Brick Paving Only on Residence Streets

Detroit, Mich.—That Detroit will do well to follow the advice of Commissioner Haarer and desist from the use of brick pavements, except in the residence streets, where the traffic is comparatively light, seems to be the consensus of opinion of the special committee of the Board of Commerce which has been investigating the paving situation for several weeks. The committee declares that all streets where there is anything like through traffic or heavy local traffic should be paved with granite block, creosote block or asphalt. Accompanied by the Commissioner the committee made an inspection of some of the streets that have been the subject of discussion during the investigation, and the job that seemed to strike the members with most force as illustrating the relative unfitness of brick for heavy traffic was the paving of the first alley west of Woodward avenue. That part of the alley was paved with brick about five years ago. It has been repaired repeatedly since then and is now in worse shape than the average brick pavement on the streets about the city.

SEWERAGE AND SANITATION

Bakers Must Comply with Ordinance.

Chicago, Ill.—In a suit brought by forty owners of bakeries attacking the constitutionality of the ordinance enacted to bring about the sanitary conditions in preparation of food products, the application for temporary injunction was denied by Judge Brentano in the Superior Court. The decision states that the Commissioner of Health, after having made a careful investigation, found that the requirements of the ordinance had not been complied with by the complainants, and reported adversely upon applications for licenses, and the Mayor refused to issue the licenses. Under the ordinance those engaged in operating bakeries are required to obtain a license, and the ordinance makes it a duty of the Commissioner of Health to make an examination of the places where such a bakery is conducted. The ordinance also prescribes the materials of which floors must be constructed, and various other appointments of a bakeshop.

Washouts at Lake Street Sewer

Newburgh, N. Y.—Trouble over the Lake street sewer, caused by the abandonment of the contract by Pietro Luciano, has been increased by reason of the recent storm, and on parts of the street there have been great washouts. It was found that the earth had been washed out to such an extent that the gas mains were suspended and were in danger of sagging to a break. The digging machine above the trench was in imminent danger of toppling over, being upheld by a single timber. Street Superintendent Bastian notified the Central Hudson Gas and Electric Company of the condition, but the company said the situation was up to the city, a statement which the superintendent was in no position to contradict. He at once became busy and put men to work in an effort to prevent further damage.

Advise Boiling Willimantic Water

Willimantic, Conn.—In a report to city health officer Dr. Keating, the following is the result of analysis of the city drinking water by chemist Newlands:

"This water is a little more highly colored and has a slightly higher mineral content than the sample of last month, due, very likely, to the very heavy rains of a few weeks ago. The numbers of bacteria are lower than they were in last month's sample, but Colon bacilli are still present in one cubic centimeter volumes of water. As I have previously stated, Colon bacilli found as frequently as these are in this supply indicates definite contamination, and the use of this water is a menace to the public health. So long as people on the drainage area of the water supply who are contributing to this contamination do not suffer from typhoid fever, health conditions will continue about as they are now. The infection of any of these people with typhoid fever germs, however, will cost the city more than the best purification system which could be installed for the protection of public health. I believe this matter should be given consideration, and the public advised to boil all water used for drinking purposes until necessary changes can be made.

WATER SUPPLY

Locating Pure Water Supply

Albion, N. Y.—The recent search for a pure water supply for which a fund was provided has resulted in a find on the William Marshall farm, about two miles south of Albion. A twelve-inch well has been drilled and pumped continuously for weeks, yielding a flow of about 750,000 gallons per day. The actual consumption of water is about 350,000 gallons, and experts estimated that a flow of 500,000 gallons per day is the greatest maximum which will be required. Dr. Mason of the Troy Polytechnic Institute has made tests of the water and will make his findings public in about a week.

Chloride of Lime as Water Purifier

Klamath Falls, Ore.—As a result of the conference between city officials and those of the Klamath Water Company, the president of the company has stated that a chloride-of-lime purification plant will be installed at the pumping station at the spring if found to be beneficial—the object being to prevent spread of typhoid fever. This kind of system is in use at Salem and is a success. It is estimated that six pounds of chloride of lime will purify 100,000,000 gallons of water.

Planning for Jersey Water Supply

Trenton, N. J.—The State Water Supply Commission has forwarded to Governor Wilson a report received from its consulting engineer, Morris B. Sherrerd, outlining two plans for supplying water to north Jersey municipalities from the Wanaque watershed. The engineer estimates that both plans might be put in operation at a total cost of \$9,190,750. The plans proposed by Mr. Sherrerd are both in line with the general scheme for the conservation of potable waters of the State. For the low-level supply it is proposed to construct a reservoir on the Wanaque River near Midvale. The reservoir would have an elevation of flow line 275 feet above sea level and an approximate capacity of 11,000,000,000 gallons. The high-level plan contemplates the construction of an intake reservoir just below the outlet to Greenwood Lake.

Sue City for Short Water Supply at Fire

Somerville, N. J.—The question whether a person can recover for damage to property by fire upon an allegation that the municipality failed to maintain an adequate water supply for fire protection, is the main issue in suit in the Supreme Court in which Justice Parker has filed an opinion giving judgment upon a demurrer in favor of the plaintiff. The action is that of Michael Baum, of Somerville, against the Somerville Water Company. Baum's factory and contents in Somerville were destroyed by fire July 8, 1909, and he sued the water company to recover \$80,000, of which sum \$50,000 was for the factory buildings and \$30,000 for their contents. He charged the company with being responsible for the fire because it had not maintained a proper water supply in the town. The plaintiff claimed that the water company had a contract with Somerville to provide an adequate water supply, and trusting to that contract as a citizen of Somerville he had trusted to the supply for his fire protection. The fire broke out in a pile of lumber adjoining the Baum factory, and the plaintiff claimed that had the water supply been adequate the flames could readily have been extinguished before they communicated with the factory buildings. He charged that the water was lacking. The water company filed a demurrer to the declaration averring that the plaintiff did not allege any privity of contract or set forth any contract requiring any service of water; also that the loss was not sufficiently set forth. Judge Parker gives judgment to the plaintiff on the demurrer on the ground that the action is not based upon a contract obligation but is a damage suit grounded on the alleged public duty of the water company arising out of its franchise from the municipality. The case will now go to a final hearing. It is the general opinion among lawyers who frequent the State House that if the final decision shall be in favor of the complainant it will result in compelling all municipalities in the State to be certain that their water supply for fire protection is ample.

Bond Issue Enjoined

Walter, Okla.—Joseph Loving, former City Marshal of Walter, has filed an injunction suit here to prevent the issuance of \$6,500 in water-works improvement bonds, voted September 8 by the city of Walter. The suit is another move in the fight between a private water-works plant and the municipal one in Walter.

Plan to Dam Up Water for Dry Seasons

St. Paul, Minn.—Advisability of using Red Lake as a reservoir will be urged in the report which will be made soon by the St. Paul office of the United States Geological Survey as a result of investigations which soon will be completed. By constructing a dam it is thought the water will be held in the lake during wet seasons so that it can be let out gradually in dry seasons. This will save Thief River Falls and other cities along the Red Lake River, which depend on water power derived from the river to furnish light and electric power, from finding themselves without light as they have many times in the last year. It also will prevent overflowing of the Red River to a great extent. The Red Lake River flows into the Red River, and as it drains more than 1,500 square miles in the spring the water which is emptied into the Red River during wet periods causes it to overflow.

Raising Dam Will Not Pollute Water

Cincinnati, O.—That the raising of the Fernbank dam during low water will not affect the purity of the river water in the pool above to any appreciable extent was the declaration made by J. W. Ellms, chemist and bacteriologist of the filter plant at the water works. Ellms said the data so far secured in the tests which have been made by the Water Works Department indicate that no serious contamination from sewage will result. While the dam was in process of construction there were many fears expressed by engineers, chemists and physicians that the retarding of the flow of the current would result in the river above the dam becoming almost an open sewer. The water-works tests will be continued.

Shrewsbury's New Water Works Completed

Shrewsbury, Pa.—Last week marked the completion of one of the greatest improvements of the town—the new water-works system. It is of considerable magnitude and was secured only after considerable litigation and effort on the part of the town people. The first water company here, a private corporation, was formed 40 years ago and drew its water from two artesian wells, lifting it by means of windmills and storing it in wooden tanks. Gasoline engines were also used during the summer, and to increase the storage capacity an underground cement reservoir of 48,000 gallons capacity was built. The need for a better system was demonstrated by several large fires, and at a popular election it was decided that new water works should be built and \$12,000 be appropriated to do the work. After months of debating possession was obtained of the old company's plant and a perpetual lease of a number of large springs to the eastward of the town was purchased. The structure consists of a circular wall 20 inches in thickness, 30 feet in diameter, and 36 feet in height to the top of the cupola. The walls are braced with hundreds of iron rods and hermetically sealed. Automatic gauges mark the flow of water. To make the work complete an underground connection joins the old and new reservoirs, giving a combined capacity of 200,000 gallons of water, which is emptied and renewed with 2,400 gallons of fresh water each day.

Brookline Filter Gallery Opened

Brookline, Mass.—Full power was turned on last week for the first time at the new filter gallery recently completed by the town of Brookline at Cow Island, West Roxbury. Work was commenced during the summer and finished in time to catch the flow to the Charles River of this fall's rainstorms. The gallery extends along the banks of the Charles for a length of some 200 feet at distances varying up to 800 feet from the stream. It takes the underground flow from the uplands on its way to the Charles and stores it for pumping to the Brookline reservoir. The Brookline water supply has heretofore been dependent upon the town artificial wells and upon the reservoir, which contains an average of 7,500,000 gallons, scarcely two days' supply.

Louisville to Use Hypochloride System

Louisville, Ky.—George Reyer, Supt. of the Nashville Water Works, is in receipt of a letter containing the information that the Louisville water-works superintendent has recommended for use in Louisville the purification system for city water now used in Nashville. The system includes the use of the hypochloride-of-lime process to the filtration. Louisville has a \$3,000,000 filtration plant, completed about a year ago, and while the results have been good, the superintendent thinks it can be made better by the use of the Nashville system.

Bacteria Still in Water

Cleveland, O.—The report has been made to Health Officer Friedrich by Assistant City Bacteriologist Way that evidence of intestinal bacteria is still being found in the water supply, notwithstanding that chlorine has been in use at the Kirtland pumping station for some weeks. "I think this may be due to the fact that the city laboratory does not use water freely and that the water that it is drawing is that which was in the pipes prior to the use of chlorine," said Dr. Friedrich. There is a continued falling off in the number of new typhoid cases.

Water Supply in Flint in Danger

Flint, Mich.—Mayor Menton has appointed a special committee of Aldermen to confer with the Park, Water and Health Boards in respect to the purchase of the Hamilton dam. For nearly two years the City Council has been wrestling with the problem without success and matters have now reached a stage where the city is threatened with a suit by the owners of the dam unless settlement is soon made. All of the city boards and the Council are in favor of the purchase of the dam, but the price of \$40,000 has been considered prohibitive. Under the present conditions of affairs, if the dam should give way, the city would be without a water supply, as the Water Board could not build another dam for 15 years, until the flowage rights of the dam owners had lapsed. It is realization of the condition which is making the city anxious to find a solution to the problem. The city needs the river water and it cannot afford to take any chances on losing the supply, although some of the Aldermen prefer to go into court rather than pay the price asked by the estate.

STREET LIGHTING AND POWER

Trenton Without Lights, Pending Decision as to Owner

Trenton, Tenn.—The fourth election on the electric light question was to have been held last week, but the company who formerly owned the old light plant and who claim that the City of Trenton bought it about a year ago, saying that it refuses to pay for the same, enjoined the Mayor, Board of Aldermen and the officers of the election from holding the election. The questions that have for so long been the bone of contention in city politics, and on which many of the best citizens of the town have been divided, is now in the courts for settlement. Unless there is some agreement reached it will be some time yet before Trenton will be able to get lights.

Boston to Have Municipal Gas Lighting

Boston, Mass.—The recent calling for bids for inverted gas mantle lamps and gas post extensions marks the final step in carrying into execution the plan for municipal ownership and operation of gas lamps in the city. Boston gas lighting since 1899 has been done under contract with the Rising Sun Street Lighting Company. This contract with the Rising Sun Street Lighting Company expired in 1906, and since that time has been extended for short periods, the present extension expiring January 31, 1912. The ownership by the city of its gas lamps will give to the city the opportunity to take advantage of the economies which automatic lighting and extinguishing devices will undoubtedly make possible during the next few years. There is every indication that the lighting problem, which has now been hanging fire for about five years, will reach a final satisfactory solution during the coming months. This solution has been possible not only through the activity of Commissioner Rourke, but through several careful reports of the Finance Commission and the action of the Mayor and City Council in authorizing the loan of \$300,000 for street lighting equipment on June 30, 1911.

Beavers Shut Light Plant

North Bay, Ont.—Busy beavers in Algonquin Park plunged North Bay, Ont., into darkness one night last week. The power for lighting the city is generated on South River, twenty miles away, but owing to the construction of beaver dams at the headwaters of this stream the water employed for power purposes fell until the power supply failed. The law forbids any interference with the beavers, so the city authorities are applying to the provincial government for permission to destroy the dams.

Ordinance Regulates Gas Rates

Santa Monica, Cal.—Agitation for a reduction in gas rates and inspection of the quality of the supply has been started at intervals during the past four years, but the first definite action was only taken last week in placing before the City Council an ordinance, drawn at request of the Board of Trade, fixing the gas rate at \$1 per thousand cubic feet, a reduction of 10 cents from the prevailing price.

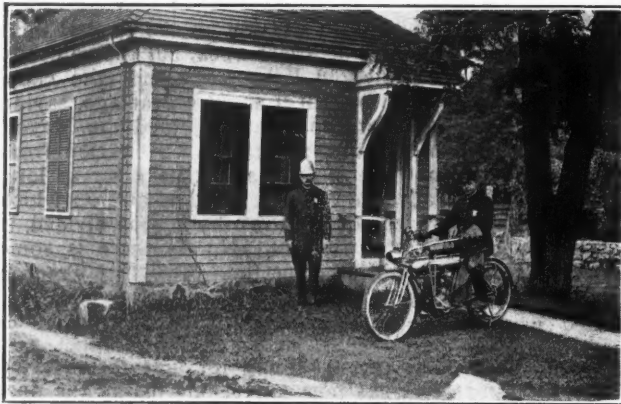
FIRE AND POLICE

Firemen Want Higher Pay

New York, N. Y.—Armed with the contention that the cost of living has advanced 56 per cent during the last 15 years, the engineers and firemen in the Fire Department have again petitioned the Board of Estimate for salary increases of \$200 a year for engineers and for all three grades of firemen. The firemen say that they haven't had a raise in pay for 15 years, while the salaries and wage scales of corporation employees, as well as Federal and municipal employees and all mechanics, have risen from 20 to 60 per cent. In San Francisco, the eleventh city of the country, firemen get more pay than in New York, notwithstanding, the New York firemen say, the New York department responds to ten times as many fires as the San Francisco department, or as many as the departments of Philadelphia, Chicago and Boston combined.

Motor Cycle Squad for Beverly

Beverly, Mass.—The Beverly Police Department furnished protection to the summer residents of the entire surrounding territory by inaugurating a system of motor cycle patrol and establishing a motor cycle squad. The



BICYCLE POLICEMAN AT SUMMER CAPITAL

plan proved effective and the service efficient in regulating the speed of motor cars on the State highway, and in enforcing the law in relation to lights. A new style of uniform was adopted for the "motor cops."

Finest Police Station Opened

New York, N. Y.—New York's police station de luxe, at Clinton and Delancey streets, was opened last week; it is the Thirteenth Precinct house, and replaces the old house at Attorney street. It is declared to be the finest police station in the city, if not in the country. In the building every convenience of the men has been looked after. The opinion is expressed that the comforts the men are afforded, the opportunity they will have to change and dry clothing, the sleeping quarters, baths and other conveniences will more than repay the city in the improvement of the general health of the men. The building is a five-story sandstone structure. The ground floor contains the desk, the captain's rooms, the sitting rooms for the men and the matron's apartments, in addition to the cells. Of the latter there are 34 for male and six for female prisoners. The second floor contains the administrative offices of the First Inspection District, with sleeping rooms for the lieutenants and sergeants. The three upper floors are given over to dormitories, nine in number. At present only five are in use. These are so arranged that the 12 squads represented in the three platoon system will be separated. The arrival and departure of one squad of men will not interfere with the sleep of the others. There are shower and needle baths and large porcelain tubs for the use of the men.

Motor Fire Wagon Purchased by Dublin

Dublin, Ga.—The city authorities have purchased a motor fire wagon to be used by the Fire Department. The price paid was \$5,750, the machine being 70-horsepower, carrying two chemical tanks, with a capacity of 35 gallons each.

Auto Fire Engine Saves City Expenses of New Station

Dallas, Tex.—Fire and Police Commissioner Fred W. Bartlett, recently returned from attendance upon the Milwaukee convention of Fire Chiefs, visited there and in other cities the fire stations and inspected their fittings apparatus and records. He has come home more than ever favorable to auto fire apparatus. At the next meeting of the Board of Municipal Commissioners he will recommend to the board the purchase of an auto fire engine, after the type of two already purchased by the city. The members of the board have already expressed themselves as favorable to the purchase if the right terms are obtainable. The auto engines already bought by the city have cost about \$5,200 each. They have been fully tested and approved, and it is the declaration of Fire Chief Magee that many fires that might have been dangerous by the time horse apparatus could reach them have been stopped in early stages by the auto apparatus. As yet the auto engines will hardly take the place of the very large size steamers, the Chief says, but the gasoline engines, using their own power for propulsion and for pumping, are able to do as much as or more than any of the steamers in use in this city.

Borrowed Police for Missouri State Fair

Sedalia, Mo.—Governor Hadley took upon his own hands the responsibility for the proper protection of President Taft when he attended the Missouri State Fair at Sedalia. He directed the Police Departments at St. Louis and Kansas City to send four mounted officers and two detectives, and the Department at St. Joseph to furnish two detectives, making a total of 14 officers from the three cities. This number, together with the police of Sedalia, the Sheriff of Pettis County and his deputies and the secret service men, the Governor believed to be sufficient to carefully guard the Nation's Executive while he was in Sedalia.

Police Holiday System Begun

Providence, R. I.—The concession of one day a month off has been made the men of the Police Department, and for at least this one day they may feel that their time is their own. The privilege does not include members of the traffic squad, as they have every Sunday and most of the holidays, or part of the latter, at least, to themselves; neither will it be extended to the patrol drivers, who are not strictly members of the Police Department. The matter of arranging the system so that every man should have a full day off duty was one that bothered the heads of the department for a time. After consultations between the Board of Police Commissioners and Acting Superintendent of Police a plan was finally hit upon which, it is thought, will prove successful and satisfactory to the men. The two night reliefs in the various precincts average in the neighborhood of 30 men. It was decided that the men on the first relief should be given the odd days off in each month, the men on the second relief the even days. Then each man will draw for the date he is to have off. Should the men wish to exchange dates they may do so, providing the exchange does not interfere seriously with certain details.

Clean-Up Week to Remove Fire Hazards

Rochester, N. Y.—A proclamation requesting the people of Rochester to devote a week to "clean-up" purposes is to be issued during the week by Mayor H. H. Edgerton, at the request of a special committee of the Chamber of Commerce. The committee called upon the Mayor at the City Hall and asked His Honor to use his influence with the householders to have a general "clean-up" week. The Mayor is in favor of the "clean-up" idea and needed no urging to adopt the suggestion. The "clean-up" idea is not original with Rochester, but is widespread throughout the country. Boston and several other New England cities have adopted the idea and have devoted periods from one day to a week to the cleaning up of rubbish piles and anything which could possibly cause or feed a fire. Several Western cities have also had "clean-up" days recently.

Fireproof Buildings for Business District

Boston, Mass.—The committee on fire protection favors the enactment of a law prohibiting the construction of any but fireproof buildings within the congested business district.

GOVERNMENT AND FINANCE

Water Board Buys Bonds

Auburn, N. Y.—The Auburn Water Board has a bank balance of \$37,045, a portion of which the commissioners have determined to invest in municipal bonds when opportunity offers. Commissioner Conway, in addressing the board, referred to the good results attending the use of the hypochlorite disinfecting plant at the lake. He recommended that it be again used until further notice and the board so ordered. Dr. Conway also stated that results of bacteriological examinations made by Professor Meader, of Syracuse University, for the board are known in three days from the taking of samples, which is much quicker than results can be obtained from the State laboratories.

City Should Not Exhaust Borrowing Capacity

Boston, Mass.—On August 31, 1911, the city's right to borrow had been reduced by loans authorized during the current year to \$986,983.43. This is a sum less than was left in the legal borrowing capacity by the preceding City Council at the end of the last financial year. In the opinion of the Auditor, the city should always be in a legal position to borrow at least half a million dollars to meet the needs of a conflagration or other great emergency. Further, sound municipal finance requires, he says, that, in view of the extravagant borrowing policy which was pursued by the city in the 12 years following 1895, the next few years should see a very conservative policy in the matter of issuing city debt.

Atlanta's New City Charter Defeated

Atlanta, Ga.—The new city charter for Atlanta enacted by the recent Legislature subject to a referendum was voted down last week by a majority of 1,995 votes. This means that Atlanta's city government must continue under a charter that was enacted 37 years ago, when Atlanta was little more than a country village.

Discrepancy in City Cash Figures

Wilmington, Del.—Differences ranging from \$1,000 to \$102,648 have been discovered between the annual reports of receipts and expenditures compiled by the City Auditor and the City Treasurer for the fiscal year ended June 30, and the Finance Committee of City Council is trying to find out where the trouble is, although no official investigation has been ordered. The difference is causing the committee much concern, for it is upon these reports that the budget for the next fiscal year is computed. Relative to the appropriation made by the city to the Wilmington Institute Free Library, the Treasurer's report shows the amount to be \$13,960.12, while the Auditor's report shows it to be \$12,960.12, a difference of \$1,000. The Treasurer's report shows the total receipts from all sources to have been \$1,394,384.39, while the Auditor's report shows \$1,291,736.29, a difference of \$102,648.10. Big differences appear in other receipts and expenditures, and Councilmen have been much disturbed by the discovery, though none would admit that a special audit of the books would be made in either office, or that an official investigation would result.

Metropolitan District of Eastern Massachusetts

Boston, Mass.—The Metropolitan District of Eastern Massachusetts consists of 30 municipalities, including Boston, or 13 cities and 17 towns, all within 10 miles of the State House. Population in 1910, 1,378,435, or 151,577 more than in 1905. Total valuation of taxable property in district on April 1, 1910, \$2,214,446,549, of which \$820,681,126 was outside of Boston. Net municipal debt of district, \$104,213,329, of which the 29 municipalities outside Boston owed \$34,626,564. The total net metropolitan debt for water, parks, sewers and Charles River Basin improvements on February 1, 1911, was \$60,008,172, which, added to the net municipal debt, makes a total of \$164,221,401. Of 1910 tax rates the highest was Chelsea's (\$22.40); the lowest (except Nahant's) was Milton's (\$11.90). Only four towns and no city had a lower tax rate than Boston, viz., Nahant (\$9), Milton (\$11.90), Brookline (\$12.50), Swampscott (\$15). Total of registered voters in district outside of Boston in 1910, 121,914; total registered in Boston, 110,326. Democratic majority over all in entire district in 1910, for Governor, 23,128. In the 35 years, 1875-1910, the population of the district outside of Boston increased 454,287, or 179.16 per cent; in Boston, 328,666, or 96.12 per cent.

STREET CLEANING AND REFUSE DISPOSAL

Urge Street Sprinkling Continued

Lestershire, N. Y.—Because at present the main thoroughfare is in possession of a thick layer of mud the merchants and a number of residents of Main street have been complaining strenuously as a result of the dust that has been circling into stores, houses and the eyes and ears of pedestrians. The dust at frequent intervals of late has so filled the air that people can scarcely keep their eyes open without being afflicted. Even though the summer, a season when careful attention was given to sprinkling the streets, is past, the public expresses the universal opinion that equally as much attention should be given to laying the dust at this time, when the fall winds make it fully as disagreeable as during the hot months. It seems to have been the tendency to neglect the sprinkling since the paving issue became a certainty, but until the pavement is a reality the merchants and housewives are eager to see the sprinkling wagon in operation, and it is altogether probable that Street Commissioner Cresson will comply with the wishes of the populace.

Complain That Garbage Collection Is Unsatisfactory

Hartford, Conn.—Residents of the city are making complaints against the company that is contractor for the removal of garbage. Representing the Third Ward, Councilman Carl A. Secoy said that frequently a week elapsed between collections, and on one occasion recently, two weeks. It was required that the residents provide covered cans for the garbage, and this was done; but often the collection was left so long that the cans became filled to overflowing, and the covers were of no use. The men in charge of the collection went about their work in a filthy manner. Whenever they found a can nearly full they stepped into it and trod it down, after which they walked about the yard in their filthy boots. Investigation in the matter has been urged and is promised.

Steel Garbage Wagons to Prevent Leakage

Utica, N. Y.—The new steel wagons which will be used hereafter in the collection and removal of the garbage under the new contract between the city and William Pritchard have been ordered, and will be put in service as soon as they arrive. They are to be kept covered all the time, and it is expected that this innovation will be much more sanitary and do away with the nuisance of leaky garbage wagons, as under the previous contract when the wagons were of wooden construction.

RAPID TRANSIT

Will Confer with Railroad on Rates of Fare

Toledo, O.—Franchise negotiations on the basis of a resolution approved by Council September 7 will be opened between the city and the Rail-Light in a short time as the result of action taken by the directors of the street car company at the last monthly meeting of the board. Council resolution provided for the appointment of a sub-committee of five to act in conjunction with a committee of the Rail-Light in going over the books of the company to determine what rate of fare would give a reasonable return on its investment. In other words, to determine whether the company could operate its lines profitably on a three-cent fare basis. Council committee consists of Mayor Whitlock, Councilmen Merrell, Robinson, Spitzer and City Solicitor Cornell Schreiber.

Commission Reports on Passenger Traffic

New York, N. Y.—The Public Service Commission has handed in a report which shows that an average of 1,600,000 passengers have been carried annually from 1907 to 1911 by subways, elevated lines, street surface and steam railroads in this district. For this transportation the public has paid annually an average of \$77,943,772. The board reports that three-quarters of its time and 60 per cent of the total expenditures have been given to the work of planning and building rapid transit lines.

Commission Amends Franchise Given Interurban

Polytechnic, Tex.—Polytechnic City Commissioners have sustained Mayor Thomas in his veto of the franchise granted to the Fort Worth Southern Traction Company to operate an electric line through the corporate lines of the infant township. Last week Mayor Thomas vetoed the franchise, which had been granted by Commissioners Garrison and Dillow. The two Commissioners agreed to abide by the decision of the Mayor. The franchise as granted called for the erection of a stop in the corporate limits of Polytechnic and the stopping of the interurban cars to take on and permit to get off passengers to and from Cleburne. By the amendment which has been adopted by the City Commission the franchise will read: "To take on and allow to alight passengers to and from Fort Worth and Cleburne." Manager Clifford, of the traction company, said that he did not know what action would be taken by the company in regard to the amended franchise, and that the hauling of passengers to and from the city proper would greatly injure the service on that line and that he saw no need of such service when the Hilltop was accommodated with 12-minute street car service.

Orders Ordinance for Regulating Car Fares

Los Angeles, Cal.—The first step toward the regulation of street car fares in Los Angeles was taken by the City Council last week, when it adopted a report from its legislation committee authorizing the City Attorney and the Board of Public Utilities to prepare an ordinance giving the board power to investigate the street railways. The proposed ordinance will merely make effective the power which the city is given in its charter to compel reports from the street railway companies, make valuations of the corporation properties and to establish the rates to be charged. This power, so far as it affects gas, electric, telephone and water companies, is now exercised by the city, but a specific ordinance covering the transportation companies has been lacking. The plan for the regulation of street car fares originated with the Board of Public Utilities and was first made an immediate issue when it was strongly advocated by E. O. Edgerton, secretary of the Municipal League, in a recent speech before the City Club.

MISCELLANEOUS

Muncie to Have Public Market

Muncie, Ind.—That Muncie, without a public market, is in the grasp of commission merchants who are endeavoring to throttle competition among gardeners and farmers and are keeping the prices of farm products above what they should be, is the belief of Mayor Edward M. Tuhey and the City Council, who have started an investigation suggested by the investigation of Indianapolis conditions. The members of the Board of Public Works and other Councilmen are now absent on a trip that will include several Indiana cities having markets, to see what may be done to combat the commission men in Muncie. It is believed the people should at once take some steps to free themselves from the high prices and that ultimately there should be a city market from which the middlemen would be excluded. Peaches are going to waste in this county, but the farmers who bring in peaches are asking the same prices that are demanded by the grocers. One farmer was asked why this was the case and replied that if he sold at lower prices he feared he would be "caught at it."

Milwaukee Builds Isolation Hospital

Milwaukee, Wis.—Building Inspector Ringer issued a permit to the city last week for the first wing of the new Isolation and Municipal Hospital, on Mitchell Street. The first wing will cost \$65,070 and will be two stories high. It will be 67x160 feet, of concrete and brick. There will be tile partitions and rounded corners. It will be for the care of scarlet fever and diphtheria patients. Next year the second wing, similar to the first, will be built. Later an administration building and power plant will be erected. The Council has issued \$100,000 bonds for the hospital, but will increase the amount when needed.

Pass Vehicle Tax Ordinance

Puyallup, Wash.—An ordinance was passed at the meeting of the City Council last week licensing all hacks, carriages and other passenger vehicles for hire within the city limits. The motor-driven vehicles will be granted a license for \$20 a year, while the other vehicles will be charged \$5. The owner or driver shall not charge more than 10 cents a mile or fraction thereof for each person. The license number and the price must be placed in a conspicuous place on the vehicle. The ordinance does not apply to the usual business of the local liverymen.

Ask Bids for Ice-Breaking

Lorain, O.—The River and Harbor Committee of the City Council will, at the next meeting of that body, recommend that the Director of Public Service be authorized to advertise for bids for breaking the ice in the harbor this winter. The value of keeping the harbor open during the winter months has been proved by the experiences of recent years.

Removal of Poplar Trees Ordered

Reading, Pa.—The property owners ignoring notices to remove them the Councils of Dubois, Pa., ordered the chopping down of all North Carolina poplar trees because of their destructiveness. It is a variety that grows rapidly and the roots throw curbs out of line, force up sidewalks, penetrate foundations of buildings and get into the joints of sewer pipes. In his last annual report City Engineer Ulrich recommended to Councils that legislation be enacted for the removal of North Carolina poplars in Reading (of which there are quite a few) and prohibit future planting of them for the above reasons. No action was taken on the recommendation.

Would Reduce Telephone Rates by City Ownership

Cleveland, O.—If a resolution to be offered in the council at next meeting be adopted, municipal ownership may be the means used by the city to force efficient telephone service and prevent advance in rates. Councilman Townes announced that he will offer a resolution calling upon the city clerk to request the Cuyahoga County delegates to the constitutional convention, as soon as they are elected, to work for an amendment to the constitution which will give cities the right to own and operate telephone plants and equipment. In his opinion cities now entering the field would be in a position to compete with the privately owned lines, because of the automatic devices that have lately been invented. One automatic system enables each subscriber to obtain his own numbers and does away with the necessity for the maintenance of the telephone exchange, with its big corps of operators.

To Have Uniform and Artistic Poles for Electric Wires

Chicago, Ill.—Chicago is to have a Civic Beauty Commission which will be named by Mayor Harrison in a message to the City Council. The first feature of municipal utilitarianism to which it will apply its beautifying talents is to be the poles which support trolley wires, electric lights and other conveyers of electricity. After a uniform and artistic type has been selected for them the Commission will have some other feature of city architecture brought to its attention. "Other members will be added to the Commission so as to make it as nearly representative as possible," said Mayor Harrison, as he gave out the list of appointments. "Its first subject for consideration will be the poles for electric current. At present some of the parks have concrete ones, in some places they are wood; the trolley poles are atrocious and there is plenty of room for improvement."

To Adopt Ordinance for Removal of Awnings

Fort Worth, Tex.—After waiting about six months for the removal of permanent awnings on Main and Houston Streets the City Commission has decided to adopt an ordinance requiring the removal of all awnings so that the new lights now being erected may not be interfered with by obstructions. All wooden and iron awnings will come down and only such as are made of cloth and are movable will be permitted.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Garbage Contract—Fines—Construction by Parties

Brockway et al. vs. City of Utica.—A contract with a city for the removal of ashes and rubbish from the streets provided that for each failure to so remove the sum of \$2 might be deducted by the City Engineer from the payments to the contractors, and that the sum should be considered as liquidated damages, and not as a penalty. For many months the engineer made deductions and the contractors accepted payment, without objection. This went on for a long time until a new city administration came in, when the contractors presented claims for the amount deducted, and brought an action therefor. Held, that, having assented to the deductions each month, they could not now impugn the decisions of the City Engineer, for the city authorities had a right to believe that, when the money was accepted any controversy over the deductions made was final.—Supreme Court of New York, 130 N. Y. S., 1013.

Bond Election—Form of Ballot—Validity

Stem et al. vs. Bethlehem Borough.—The form of ballots to be used at an election authorized by Act April 29, 1903, to ascertain whether the indebtedness of the borough should be increased, must be that which is prescribed by the act, and where the question submitted is printed on the ballot, but is not followed by the words "yes" and "no" the election will be invalid.—Supreme Court of Pennsylvania, 80 A. R., 984.

Franchises—Natural and Artificial Gas

Cumberland Gaslight Company vs. West Virginia & Maryland Gas Company.—Under section 93 of the general incorporation law of Maryland, as amended by Act April 7, 1876, which authorizes any gaslight corporation organized thereunder to furnish gas in any city or town for the lighting of streets or public or private buildings and to lay pipes in the streets and ways with the consent of the municipality, an ordinance of a city having general power to legislate for the general welfare and for providing proper and suitable lights for the streets, etc., granting the right to a foreign corporation to lay pipes in its streets to supply the city and its inhabitants with natural gas for fuel and lighting purposes, is not subject to attack by another gas company having a franchise to use such streets, that being a matter for the State alone.—Circuit Court of Appeals of the United States, 188 F. R., 585.

Contracts—Validity—Presumptions

New York, Susquehanna & Western Railroad Company vs. Mayor and Aldermen of the City of Paterson.—Where a contract purporting to be made by a city in respect of a matter concerning which the city has the power to contract is signed by the Mayor and sealed with the municipal seal, the contract will be prima facie presumed to be within the municipal authority. This presumption will be rebutted only when it appears that no authority was given to the Mayor to sign and affix the seal to such contract by any department of the city government upon which rested the authority to authorize the contract.—Supreme Court of New Jersey, 80 A. R., 949.

Intoxicating Liquors—Validity of Regulations

Manor vs. City of Bainbridge.—The fact that one sold "near beer" during 1909 and 1910 under a license from the municipal authorities at a certain place, and that he made valuable improvements at such place for the purpose of operating there a "near beer saloon," did not make invalid a municipal ordinance passed in December, 1910, whereby it was made unlawful after that year to sell "near beer" in the city limits, except within specified territory, which did not embrace the place above referred to; nor did such facts make unlawful the refusal of the city authorities to grant such person a license to sell "near beer" during the year 1911 at the place named.—Supreme Court of Georgia, 71 S. E. R., 1101.

Change of Grade—Establishment by Usage

Nochology vs. Village of Newark.—The application of lot owners for appointment of commissioners to determine their damages from change of grade of a village street, and the notice of the application, having stated facts showing that the work was lawfully done by the village, the allegations therein that its acts amounted to an appropriation of petitioners' property, and were made wrongfully and without legal process or procedure, if not construed as an intended allegation that no proceedings for appropriation of land under the condemnation acts were taken, which construction does not militate against petitioners' claim for damages, are merely unsupported conclusions of law, to be treated as surplusage. Change in elevation of a street is a "change of grade" thereof, within Village Law, allowing lot owners to recover damages; the grade thereof, while not previously fixed by ordinance, having for years been established by usage and common consent of the public.—Supreme Court of New York, 130 N. Y. S., 1033.

Officers—Delegation of Power to Appoint

McAvoy vs. Inhabitants of City of Trenton.—A clerk of the street department is one of the subordinate officers whose appointment by the Council is authorized by the charter of the city of Trenton, but his term of office is for one year unless sooner removed, and an appointment for three years is beyond the power of the Council. Where such subordinate office is created by ordinance, the incumbent must be selected and appointed by the Common Council, and this is a duty which cannot be delegated to one of the city officials appointed by the Council. A member of the Common Council, duly elected, who, having qualified, is recognized as a member of the Council and acting as such, is at least a de facto officer, and an ordinance of interest to the public cannot be successfully assailed upon the ground that, by reason of his non-residence in the ward he represents, his office has become vacant under the terms of the city charter, although his vote was essential.—Supreme Court of New Jersey, 80 A. R., 950.

Municipal Water Supply—Power of Borough

Bethlehem City Water Company vs. Bethlehem Borough et al.—That a water company erects its plant and proceeds to supply water to a particular territory pursuant to its charter right, and subsequently, when a borough is created from a portion of a territory, continues to supply the inhabitants with water and to supply the borough with water for fire protection at fixed rates, and on the increase of the borough extends its mains and builds additional fire hydrants at the borough's request, does not raise an implied contract between the water company and the borough, excluding the power of the borough to supply water by its own plant. A municipal corporation when exerting its function for the general good is not to be shorn of its power by mere implication, and the intention to restrict the exercise of its public powers must be manifested by words so clear as not to admit of inconsistent meanings. A borough may adopt one of two methods, which exhausts its municipal power and prevents it resorting to the other for a supply of water, only to supply water "for use of the inhabitants" of a borough, and not to supply water for municipal purposes. A water company's bill to enjoin a borough from issuing bonds and laying mains for the supply of water not being filed by the plaintiff as a taxpayer, the validity of an election to ascertain whether the municipal indebtedness should be increased cannot be determined.—Supreme Court of Pennsylvania, 80 A. R., 985.

Defective Streets—Diligence Required

Mayor, etc., of City of Cordele vs. Jeter.—In a suit against a city by a traveler injured by a defect in one of the public streets it was not error for the court to instruct the jury as follows: "I charge you, gentlemen of the jury, that ordinary care or diligence upon the part of a person passing along a public street or sidewalk of a municipal corporation, and ordinary diligence upon the part of the municipal corporation in constructing, repairing and maintaining its streets and sidewalks, do not imply a like degree of vigilance in foreseeing danger and guarding against it."—Court of Appeals of Georgia, 71 S. E. R., 589.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles, where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

ROADS AND PAVEMENTS

Good Roads, Keynote of Prosperity. Automobile has forced issue of improved highways. Illustrated, 7 pp., Automobile, Sept. 28. 10 cts.

Highway Systems of British Columbia. 3-4 p., Contract Record, Sept. 6. 20 cts.

Road Construction in Florida. Illustrated, 1-2 p., Contractor, Sept. 15. 20 cts.

Road and Bridge Work in the Philippines. By Jay A. Rossiter. Illustrated, 2 1-2 pp., Contractor, Sept. 15. 20 cts.

Telford Roads. By W. W. Crosby. Illustrated, 3 pp., Southern Good Roads, September. 10 cts.

Earth Roads—Construction and Maintenance. By R. G. Thomas. Illustrated, 3 1-2 pp., Southern Good Roads, September. 10 cts.

Experimental Road, The Ohio State. Illustrated, 4 1-2 pp., Canadian Engineer, Sept. 21. 15 cts.

Organization, Ohio State Highway. 1 1-2 pp., Municipal Engineering, October. 25 cts.

Traffic Requirements, Road Improvement and. Paper before Second Irish Road Congress. By Reginald Ryves. Illustrated, 3 1-2 pp., Surveyor, Sept. 8. 40 cts.

Culverts, The Location of. 1-3 p., Engineering Record, Sept. 9. 10 cts.

Permanent Culverts. From address before American Road Builders Association. By W. S. Gearhart, state highway engineer of Kansas. 2 pp., Canadian Engineer, Sept. 14. 15 cts.

Bituminous Surfaces for City Macadam Streets. By J. C. Travilla. 1 p., Municipal Engineering, October. 25 cts.

Method of Laying Bitucrete Pavement. By Daniel J. Hauer. Illustrated, 2 1-4 pp., Contractor, Sept. 15. 20 cts.

Concrete Pavement with Thin Wearing Surface of Bitumen. By E. W. Groves. Illustrated, 1-2 p., Engineering & Contracting, Sept. 20. 10 cts.

Influence of Road Tarring on the Vegetation of the Bois de Boulogne. Paper before Academy of Sciences of Paris. By C. L. Gatin. 1-2 p., Surveyor, Sept. 15. 40 cts.

Street Paving in American Cities. By Samuel Whinery. 1 p., Engineering Record, Sept. 30. 10 cts.

Development of Street Pavements and Road Construction as Shown by Patents Granted by the U. S. Government. Illustrated, 3 pp., Engineering & Contracting, Sept. 6; Illustrated, 3 1-2 pp., Sept. 13; Illustrated, 6 pp., Sept. 27. 10 cts.

Equipment for Street Construction. Illustrated, 1 p., Contractor, Sept. 15. 20 cts.

Specifications of the American Society of Municipal Improvements, Standard Paving. 1-2 p., Municipal Journal, Sept. 13. 10 cts.

Brick Paving in Ohio. Illustrated, 6 pp., Brick, Sept. 15. 10 cts.

Contraction and Expansion of Brick Pavements. By W. P. Blair. Paper before American Society of Municipal Improvements. 2 1-2 pp., Municipal Engineering, October. 25 cts. 1 1-2 pp., Municipal Journal, Oct. 4. 10 cts.

Tests of Brick from Old Streets. Abrasion after several years of use. Relation between rattle test and condition after service. Temperature of pavements. 1 p., Municipal Journal, Oct. 4. 10 cts.

Cracking in Cement Grouted Pavements. From paper before Michigan Engineering Society. By Earle R. Whitmore, city engineer of Port Huron. 1 1-2 pp., Contract Record, Sept. 27. 20 cts.

Notes and Queries on Sand-Filled Brick Pavements. Paper before American Society of Municipal Improvements. By Maury Nicholson. 3 pp., Municipal Engineering, October. 25 cts.

Classification and Manufacture of Paving Brick. By Ellis Lovejoy. 1 1-2 pp., Brick, Sept. 15. 10 cts.

Wood Block Paving in Chicago, Creosoted. By H. G. Davis. 1 1-2 pp., Engineering & Contracting, Sept. 13. 10 cts.

Causes of Some Failures of Creosoted Wood Block Paving in Chicago. By C. K. Mohler. Illustrated, 1 p., Engineering News, Sept. 28. 15 cts.

Concrete Pavements. Types in use, important points in construction and successful results as shown by experience. By Paul Chesterton. Illustrated, 5 pp., Cement World, September. 15 cts.

Sidewalk Slab, Test of a Concrete. 1-3 p., Engineering Record, Sept. 23. 10 cts.

Street Widths and Their Sub-Divisions. Paper before Third National Conference on City Planning. By B. A. Halderman. 1 1-2 pp., Engineering & Contracting, Sept. 20. 10 cts.

Standardized Street Widths. Paper before Philadelphia Conference on City Planning. By John Nolen. 3-4 p., Surveyor, Sept. 22. 40 cts.

Railway Companies, Paving and Care of Streets by Street. 2-3 p., Engineering News, Sept. 21. 15 cts.

SEWERAGE AND SANITATION

Sewerage Scheme, The Dunmurry. Paper before Royal Sanitary Institute. By James Hunter. 1 p., Surveyor, Sept. 8. 40 cts.

Design of Sewers and Sewage Purification Plant for La Grange, Ill. By F. L. Stone. Illustrated, 1 p., Engineering & Contracting, Sept. 6. 10 cts.

Sewage, Some Characteristics of Birmingham. Paper before Managers of Sewage Disposal Works. By F. R. O'Shaughnessy. 1 p., Surveyor, Sept. 15. 40 cts.

Drainage and Sanitary Administration of Seaford. Paper before Institution of Municipal Engineers. By Boyd A. Miller. 1 p., Contract Journal, Sept. 20. 20 cts. Illustrated, 2 pp., Surveyor, Sept. 15. 40 cts.

Atlantic City Drainage Construction. Preparatory work, excavation by locomotive train, deep sheeting sunk by jetting process in soil of water-saturated sand; protecting buildings. Illustrated, 4 pp., Municipal Journal, Sept. 13; 2 pp., Sept. 27. 10 cts.

Pipe, Qualifications and Specifications for Concrete Sewer. By Gustav Kaufman. 2 pp., Concrete, September. 15 cts.

Reinforced Concrete versus Vitrified Clay Pipe for the Roswell Park Pipe Line. Communication from Z. N. Vaughn, chief engineer. 1-2 p., Engineering News, Sept. 28. 15 cts.

Reinforced Concrete Pipe Construction for Regina Sewer. By W. R. Harris. 3 1-2 pp., Concrete, September. 15 cts.

History of Reinforced Concrete Pipe. Paper before Convention of Canadian Municipalities. By Archibald Currie, city surveyor, Westmount. 2 1-4 pp., Contract Record, Sept. 6. 20 cts.

Construction of the Richmond Hill Trunk Sewer, Borough of Queens, N. Y. Illustrated, 3 pp., Engineering Record, Sept. 23. 10 cts.

Sewer Construction in St. Louis and Methods of Sewer Design. Brick and pipe sewers. By W. W. Horner. Illustrated, 7 pp., Engineering & Contracting, Sept. 13. 10 cts.

The Laying and Testing of Earthenware sewers and Drains. Paper before Royal Sanitary Institute. By A. Sayres, lecturer in sanitary engineering, Municipal Technical Institute, Belfast. 2 pp., Canadian Engineer, Sept. 28. 15 cts.

Rebuilding an Old Brick Sewer in Newark, N. J. By E. S. Rankin. Paper before American Society of Municipal Improvements. 1-2 p., Municipal Engineering, October. 25 cts.

Havana Sewerage and Paving Contract. The largest contract for sanitary works ever made. Illustrated, 3 pp., Engineering Record, Sept. 30. 10 cts.

Pumping Plant for Sewerage and Water Works. From paper before Institution of Municipal and County Engineers. By A. J. Price. Illustrated, 3 1-2 pp., Engineering News, Sept. 21. 15 cts.

Rope-Driven Centrifugal Pumps for Sewage at Providence. Illustrated, 2 pp., Engineering Record, Sept. 16. 10 cts.

Sewage Disposal at Leeds. Trade effluents. 2 3-4 pp., Surveyor, Sept. 22. 40 cts.

Some Modern Features in Connection with Sewage Disposal. Paper before Union of Saskatchewan Municipalities. By T. Aird Murray. 2 1-2 pp., Canadian Engineer, Sept. 28. 15 cts.

Design of a Sewage Disposal Scheme for a Seaside Town. By C. J. Yorath, deputy engineer and surveyor, Acton. Illustrated, 5 pp., Surveyor, Sept. 8. 40 cts.

Chicago Sewage Disposal Experiment Station. Construction of and results obtained by grit chambers, settling, septic, Emscher and biolytic tanks, sprinkling filters, sludge digesting tanks, dosing filters. Preliminary conclusions. Illustrated, 5 pp., Municipal Journal, Oct. 4. 10 cts.

Trials of Precipitants at the Sewage Disposal Works, Wakefield. Paper before the Royal Sanitary Institute Congress. By J. P. Wakeford, city engineer of Wakefield. 1 3-4 pp., Surveyor, Sept. 1. 40 cts. 2-3 p., Engineering Record, Sept. 23. 10 cts.

The 1904 Septic Tank and Filter Bed Order of the Minnesota State Board of Health. 1-2 p., Engineering News, Sept. 28. 15 cts.

Imhoff Sewage Tanks at Winters, Cal. Illustrated, 1 1-2 pp., Engineering Record, Sept. 23. 10 cts.

German Study of Sludge Drying. By Kenneth Allen. Illustrated, 1 p., Engineering News, Sept. 21. 15 cts.

Sludge Disposal with Special Reference to Different Methods for Removing Water. By Dr. Ing. Fr. Spillner. Translated by A. E. Kimberly. 4 1-2 pp., Engineering & Contracting, Sept. 20. 10 cts.

Residential Sewage Disposal Plants. Paper before Conference of Ohio Boards of Health. By R. Winthrop Pratt, chief engineer State Board of Health. 2 1-2 pp., Canadian Engineer, Sept. 14. 15 cts.

A Rotary Sieve for Sewage. By Robt. Grimshaw. Illustrated, 1 1-2 pp., Municipal Engineering, October. 25 cts.

Temporary Sewage Screening Plant at Flushing. Illustrated, 1-2 p., Engineering Record, Sept. 9. 10 cts.

Stream Pollution in Ohio. 1 p., Fire and Water, Oct. 4. 10 cts.

Arguments Against Stream Pollution. 1-2 p., Municipal Journal, Sept. 27. 10 cts.

Stream Pollution in Ohio. Attitude of State Board of Health. Importance of trade wastes as polluting agencies. Status of Bense act. 3-4 p., Municipal Journal, Sept. 27. 10 cts.

Measuring Absorption of Oxygen. Communication from H. W. Clark. 1-2 p., Municipal Journal, Oct. 4. 10 cts.

Sanitation of a Great City. By M. E. Rolants. 5 pp., La Technique Sanitaire, September. 50 cts.

Municipal Ordinances, Rules and Regulations Relating to Public Hygiene. 6 pp., Public Health Reports, Sept. 15. 10 cts. 4 pp., Sept. 22; 5 pp., Sept. 29; 5 pp., Sept. 8.

Food Products Exposed for Sale, Protection of. By H. L. Way. 6 pp., Bulletin, Ohio State Board of Health, August.

Milk Supplies, Some Aspects of Our. By A. E. Barns. 10 pp., Journal, Royal Institute of Public Health, September. 60 cts.

WATER SUPPLY

Water Works at Meridian, Ida. By E. M. Blake. Illustrated, 1 p., Engineering & Contracting, Sept. 13. 10 cts.

Haverhill Water Works. Brief description. Illustrated, 1 1-4 pp., Fire and Water, Sept. 6. 10 cts.

New York City's Water Supply. From paper before Engineering's Club of Philadelphia. By Thos. H. Wiggin. Illustrated, 7 pp., Insurance Engineering, September. 25 cts.

Geneva Water System Improvement. Report of Wm. F. Johnson. 1 p., Fire and Water, Sept. 6. 10 cts.

Water and Sewerage System of New Orleans. 1 p., Fire and Water, Sept. 20. 10 cts.

Municipally Owned Water System of Houston. Illustrated, 1 1-2 pp., Fire and Water, Sept. 20. 10 cts.

Jacksonville Municipal Plants. 1-4 p., Municipal Journal, Sept. 13. 10 cts.
Municipal Water Works at La Crosse Ordered Improved by the State Commission. 1-2 p., Engineering Record, Sept. 16. 10 cts.

Probable Development of Little River Supply at Springfield. Illustrated, 1 3-4 pp., Fire and Water, Sept. 6. 10 cts.

Water Supply of Indian Villages. By Jahar Lal Das. 1 1-2 pp., Water, Sept. 15. 25 cts.

Dam, Design of Earth. From paper by Prof. C. T. Johnston in Michigan Technique. 1 p., Engineering Record, Sept. 23. 10 cts.

Effect of the Sun's Heat on Bed Rock at a Dam Site. 2-3 p., Engineering Record, Sept. 30. 10 cts.

Some Conditions Affecting Dam Trenches. From paper before Association of Water Engineers. By Herbert Lapworth. 2 1-2 pp., Contract Record, Aug. 23. 20 cts.

Reservoirs, Reinforced Concrete. From paper before Boston Society of Engineers. By Hiram B. Andrews. 1 1-2 pp., Canadian Engineer, Sept. 14. 15 cts. 3-4 p., Contract Record, Sept. 27. 20 cts.

New Theory for the Design of Reinforced Concrete Reservoirs. By A. D. Flinn and F. F. Moore. Discussion before Boston Society of Civil Engineers. 9 pp., Journal Association of Engineering Societies, September. 30 cts.

Reinforced Concrete Standpipe. By W. W. Clifford. Illustrated, 16 pp., Proceedings, American Society of Civil Engineers, September. \$1.00.

Mains, Methods and Costs of Cleaning Water. By F. O. Redford. Illustrated, 2 pp., Engineering & Contracting, Sept. 6. 10 cts. Illustrated, 3 pp., Canadian Engineer, Sept. 28. 15 cts.

Report of the Committee Appointed to Investigate the Conditions Under which Extensions of Main Water Pipes are Made. 2 pp., Journal New England Water Works, June. \$1.00.

Electrolysis in Chicago. 3-4 p., Contract Record, Sept. 20. 20 cts.

Electrolysis of Pipes in Pittsburg. 2-3 p., Engineering Record, Sept. 16. 10 cts.

Gates, Sluice, and Valves for Catskill Water Works. Illustrated, 1 1-2 pp., Engineering Record, Sept. 9. 10 cts.

Steel Pipes, Catskill Aqueduct, Protection of. From paper before New England Water Works Association. By A. D. Flynn. 1 p., Engineering Record, Sept. 16. 10 cts.

Aqueduct, Tunnels of the Los Angeles. Illustrated, 2 pp., Contractor, Oct. 1. 20 cts.

Bottom Heading Driving on the Hunter Brook Tunnel, Catskill Aqueduct. By Arnold Becker, Pres. Glyndon Contracting Co. Illustrated, 2 1-2 pp., Engineering Record, Sept. 23. 10 cts.

Pumping Engine at Providence, New. Illustrated, 1 p., Fire and Water, Sept. 6. 10 cts.

Design of High-Duty Pumping Engine for Providence, R. I. Illustrated, 1 p., Engineering News, Sept. 14. 15 cts.

Automatic Pneumatic Pumping Plant at Shirley, Ind. Illustrated, 4 pp., Municipal Engineering, October. 25 cts.

Centrifugal Pump Capacity and Speed. By T. W. Holloway. 2 pp., Power, Oct. 3. 5 cts.

Gas Engine Pumping Plant at Haddonfield, N. J. Illustrated, 1 1-2 pp., American Gas Light Journal, Sept. 18. 10 cts.

Modern Water Works Pumping Engines. Their cost and efficiency. 1 1-2 pp., Canadian Engineer, Sept. 28. 15 cts.

Well System at St. Paul, Emergency Artesian. Illustrated, 1-2 p., Engineering Record, Sept. 9. 10 cts.

Water-Finder, An Experience with a. By W. P. Gerhard. 2 pp., Engineering Record, Sept. 9. 10 cts.

Flow of Liquids, Theoretical Formula for the Curve Resistance to the. By P. J. Markmann. 3 1-2 pp., Municipal Engineering, October. 25 cts.

Purification of Public Water Supply. Paper before Convention of Municipal and County Engineers. By Wm. Ransom. 5 1-4 pp., Contract Record, Sept. 6. 20 cts.

Some Difficulties in the Purification of Water Supplies. By G. T. Swarts. 21 pp., Journal New England Water Works, June. \$1.00.

Purification Experiments with a Surface Water in Australia. From paper before New England Water Works Association. By Harold Wasteneys. 1 1-3 pp., Engineering Record, Sept. 16. 10 cts.

Operating Results of the Nashville Purification Works. Illustrated, 2-3 p., Engineering Record, Sept. 16. 10 cts.

The Toronto Concrete Filtration Plant. Illustrated, 3-4 p., Fire and Water, Sept. 6. 10 cts.

Operation of New Orleans Filters. 2-3 p., Engineering Record, Sept. 23. 10 cts.

Practical Methods of Sand Filtration. 4 1-2 pp., Contract Record, Sept. 13. 20 cts.

Municipal Filtration Plant at Montreal. Illustrated, 2 3-4 pp., Contract Record, Sept. 27. 20 cts.

Concrete Filtration Plant at Toronto. Illustrated, 3 pp., Cement World, September. 15 cts.

Municipal Water Purification Plant at Grand Rapids. From paper before American Society of Municipal Improvements. By J. W. Armstrong. Illustrated, 2 pp., Engineering Record, Sept. 30. 10 cts.

Slow Sand Filtration Plants Treating Salt Water for the Fish Industry at Gloucester, Mass. 1-2 p., Engineering News, Sept. 21. 15 cts.

Purification of Sea Water. 1-3 p., Municipal Journal, Sept. 27. 10 cts.

Hypochlorite Plant at Strathcona, Alta. Description and results. By W. Muir Edwards. Illustrated, 3 pp., Contract Record, Sept. 20. 20 cts.

The Use of Ozone at St. Petersburg. By Dr. G. Eriwein. Illustrated, 5 pp., Technique Sanitaire, September. 50 cts.

Plant which Purifies Water. Its cultivation in reservoirs recommended for oxygenating of water. Description of the Chara. Illustrated, 1 p., Municipal Journal, Sept. 13. 10 cts.

Bacteria in Red Lake River in Winter and Summer, Study of the Relative Number of. Illustrated, 1 p., Engineering News, Sept. 28. 15 cts.

Meter Charges, Credit System of. By Burt A. Heintz. 1-2 p., Municipal Journal, Sept. 27. 10 cts.

Water Meters in Kalamazoo. 1-2 p., Municipal Journal, Oct. 4. 10 cts.

What Water Meters Have Accomplished at Kalamazoo, Mich. Paper before Central States Water Works Association. By Geo. Houston. 2-3 p., Engineering News, Sept. 28. 15 cts.

Administration of Cleveland Water Works During 1910. From report of superintendent L. C. Smith. 1 p., Engineering Record, Sept. 23. 10 cts.

Convention of Central States Water Works Association. 2 1-2 pp., Fire and Water, Sept. 27. 10 cts.

New England Water Works Association Convention. 1 1-2 pp., Fire and Water, Sept. 20. 10 cts.

Conservancy in British Columbia, Water. Paper before Convention of Canadian Municipalities. By John Y. McNaught, Reeve of District of N. Vancouver. 1 1-4 pp., Contract Record, Sept. 6. 20 cts.

Forestry for Water Works, Practical. By E. S. Bryant. 4 pp., Journal New England Water Works Ass'n, June. \$1.00.

Reforestation of Watersheds for Domestic Supply. By F. W. Rane. 9 pp., Journal New England Water Works Ass'n, June. \$1.00.

STREET LIGHTING AND POWER PLANTS

Street Lighting, Value of an Example in. 3-4 p., Electrical Review, Sept. 16. 10 cts.

Pittsburgh Series Street-Lighting System. Illustrated, 1 1-2 pp., Electrical Review, Sept. 16. 10 cts.

Street Lighting Excursion. 1 1-4 pp., Illuminating Engineer, September. 20 cts.

Campaign for Improved Street Lighting. Illustrated, 8 1-2 pp., Electrical Review, Sept. 16. 10 cts.

Tungsten Lighting on Michigan Boulevard, Chicago. Illustrated, 1 p., Electrical Review, Sept. 16. 10 cts.

Ornamental Street Lighting. Paper before Pennsylvania Electrical Association. By C. E. Stevens. 2 1-2 pp., Electrical Review, Sept. 23. 10 cts.

Ornamental Street Lamp Post Installation. By Glenn R. Chamberlain. Illustrated, 2 pp., Illuminating Engineer, October. 20 cts.

Decorative Lighting in Hamilton, Ohio. Illustrated, 2 pp., Illuminating Engineer, October. 20 cts.

Park Front Lighting. Illustrated, 1-2 p., Electrical Review, Sept. 16. 10 cts.

Municipal Lighting Plant, Pasadena's. 2 pp., Pacific Municipalities, August. 20 cts.

Standards, Calorific vs. Candle Power. Paper before Canadian Gas Association. By Wilfred Philpot, chemist Consumers Gas Company, Toronto. 1 p. Progressive Age, Sept. 15. 20 cts.

Comparison of Illuminants. By R. F. Pierce. 5 pp., Illuminating Engineer, October. 20 cts.

Conduit Construction in Denver. Illustrated, 1 p., Engineering Record, Sept. 16. 10 cts.

Vitrified Clay Conduit Construction in Salt Lake City. By R. E. Froiseth. 2-3 p., Engineering & Contracting, Sept. 6. 10 cts.

Health, Relation of Illuminating Gas to Public. From paper before Massachusetts Association of Boards of Health. By W. T. Sedgwick and F. Schneider, Jr. 1-2 p., Engineering News, Sept. 14. 15 cts.

Liability of Gas Companies for Injuries Resulting from Escape of Gas. 2 pp., American Gas Light Journal, Sept. 11. 10 cts.

Gas Meters in New Jersey, Proposed Rules for Testing. 1 p., American Gas Light Journal, Sept. 25. 10 cts.

Electric Meters, Use of Prepayment. By F. G. Vaughn. 14 pp., Illustrated, Journal of Franklin Institute, September. 50 cts.

Storage Battery in Municipal Service. Paper before International Association of Municipal Electricians. By H. M. Beck. 2 pp., Telegraph and Telephone Age, Oct. 1. 10 cts.

Depreciation, Absolute and Theoretical. From paper before American Institute of Electrical Engineers. By Henry Floy. 1 1-3 pp., Engineering Record, Sept. 16. 10 cts.

Profit Sharing in Municipal Gas Plant. 1-4 p., Municipal Journal, Sept. 27. 10 cts.

Electrical Code of New York City. 3 pp., Insurance Engineering, September. 25 cts.

Rate Decision, Far Rockaway. 4 1-2 pp., Progressive Age, Sept. 15. 20 cts.

Beloit Utility Decision by Wisconsin Railroad Commission. 4 1-2 pp., American Gas Light Journal, Sept. 11. 10 cts.

Kings County Lighting Company Decision of the New York Public Service Commission. 4 1-2 pp., American Gas Light Journal, Sept. 18. 10 cts.

Commercial Power from Water Works. General description of Wachusett reservoir of Metropolitan Water Works; utilization of unnecessary head to generate electrical power; installation of high voltage machinery. Cost and earning capacity of plant. Illustrated, 2 1-2 pp., Municipal Journal, Sept. 27. 10 cts.

Water Power Development on the Mississippi River at Keokuk, Ia. Illustrated, 10 pp., Engineering News, Sept. 28. 15 cts.

A Sun Power Plant in Philadelphia. Illustrated, 1 3-4 pp., Engineering News, Sept. 21. 15 cts.

A Commercial Sun Power Plant. Illustrated, 1 1-3 pp., Engineering Record, Sept. 23. 10 cts.

The Diesel Oil Engine. Description and efficiency. Paper before British Association for the Advancement of Science. By Chas. Day. 1 1-2 pp., Contract Journal, Sept. 13. 20 cts.

FIRE AND POLICE

Motor Apparatus and Fire Limits in Boston. Percentage of total area in fire limit compared with other large cities. Auto apparatus. Comparative cost and efficiency. 1 1-2 pp., Municipal Journal, Sept. 20. 10 cts.

Motor Fire Apparatus in New York and Vicinity. Apparatus now in use, experiences with it and contemplated additions in five cities of the Metropolitan District. New York to purchase more than 100; conditions in Yonkers, Paterson, Passaic and Newark. Illustrated, 7 pp., Municipal Journal, Sept. 20. 10 cts.

Auto Fire Apparatus. 1-3 p., Municipal Journal, Sept. 20. 10 cts.

Adapting Appliances to Conditions. 1-4 p., Municipal Journal, Sept. 20. 10 cts.

Fire Departments of the United States. Data furnished by the fire chiefs of 700 cities and towns. Amount and kinds of apparatus, size of force, amount and serviceable life of hose. Alarm service. 17 pp., Municipal Journal, Sept. 20. 10 cts.

Fire Department of Trenton, N. J. Five pieces of auto apparatus. Cost of maintenance compared with horse-drawn equipment. By E. F. Connelly. Illustrated, 3 1-2 pp., Municipal Journal, Sept. 20. 10 cts.

Fire Department Accounting. 1-2 p., Municipal Journal, Sept. 27. 10 cts.

Fire Drills in Factories. Paper before National Fire Protection Association. By R. H. Newbern. 3 pp., Industrial Engineering, September. 20 cts.

Standards of Drill and Discipline. Paper before International Association of Fire Engineers. By Chief T. F. Owens, Denver, Colo. 1 p., Fireman's Herald, Sept. 30. 5 cts.

Demerit System for Firemen. Reasons for abolishing fining system and advantages of demerit system; outline of system proposed; dismissals and promotions. By L. F. Fuld. 1 p., Municipal Journal, Sept. 20. 10 cts.

Fire Houses, Decorating Denver. 1-4 p., Municipal Journal, Sept. 20. 10 cts.

Fire Alarm Service for Small Towns and Villages. Paper before Western Canada Firemen's Association. 1 p., Western Municipal News, September. 10 cts.

Copper Clad Steel Wire in Overhead Fire and Police Service. Paper before International Association of Municipal Electricians. By W. E. Fastnacht. 1 p., Telegraph and Telephone Age, Oct. 1. 10 cts.

Police Signal System, Modern. Paper before International Association of Municipal Electricians. By J. W. Kelly. 1 p., Telegraph and Telephone Age, Oct. 1. 10 cts.

Fire Extinguishment. Desirable hydrant pressures. 2 pp., Insurance Engineering, September. 25 cts.

First Aid for Firemen. 1-4 p., Municipal Journal, Sept. 20. 10 cts.

Protection of Industrial Plants from Fire. By S. G. Walker. 41-2 pp., Industrial Engineering, September. 20 cts.

Pressure at Hydrants, Desirable. By E. V. French. 20 pp., Journal New England Water Works, June. \$1.

Fire Streams, The Calibre of. Paper before International Association of Fire Engineers. By Chas. H. Fox. 1 p., Fireman's Herald, Sept. 30. 5 cts.

Fire Barriers in New York. Illustrated. 1 p., Cement Age, September. 15 cts.

Fire Escapes in Newark. Illustrated. 1 p., Fire and Water, Sept. 13. 10 cts.

Inside Fire Escapes. 1-4 p., Municipal Journal and Engineer, Sept. 27. 10 cts.

Losses, London's Fire. 1-4 p., Municipal Journal, Sept. 20. 10 cts.

Convention of International Association of Fire Engineers. 1 p., Fire and Water, Sept. 13. 10 cts.

International Association of Fire Engineers. Illustrated. 21-2 pp., Fire and Water, Oct. 4. 10 cts.

The Milwaukee Convention. Report of the meetings. Illustrated. 11 pp., Fireman's Herald, Sept. 30. 5 cts.

Oil and Gasoline Storage, Modern Methods of. From paper before Western Canada Firemen's Association. 2 pp., Western Municipal News, September. 10 cts.

STREET CLEANING AND REFUSE DISPOSAL

Street Cleaning Practice, Notes on. 2 pp., Engineering and Contracting, Sept. 20. 10 cts.

Street Cleaning Accounting. Receipts and payments in street cleaning service; payments which should and those which should not be included. By Dr. Ernst C. Meyer. 1 p., Municipal Journal, Sept. 13. 10 cts.

Street Cleaning Accounting. Definitions of the terms expenses and outlay; necessity for fractional accounts; standard forms for reporting and accounting. By Ernst C. Meyer. 3 pp., Municipal Journal, Oct. 4. 10 cts.

Automobile Street Cleaners in Berlin. 1-4 p., Municipal Journal, Sept. 27. 10 cts.

Snow Removal in Cities by Means of Melting Machine, Economic Study of. By N. C. Johnson. 21-2 pp., Engineering and Contracting, Sept. 6. 10 cts.

Scavenging, City. Some old European municipal regulations. 3-4 p., Surveyor, Sept. 1. 40 cts.

Garbage Disposal at Columbus, O. Description and cost of plant, methods and cost of operation. Illustrated. 4 pp., Engineering and Contracting, Sept. 27. 10 cts.

STRUCTURES AND MATERIALS

Bridge, New Intermediate Shore Towers of the Williamsburg. A description of the second stage of the work to increase the capacity of the structure. Illustrated. 2 pp., Engineering Record, Sept. 16. 10 cts.

Reinforced Concrete Bridge Across the Almendares River, Havana, Cuba. By Eugene Clapp and W. J. Douglas. Illustrated. 27 pp., Proceedings, American Society of Civil Engineers, September. \$1.

Oakland Avenue Reinforced Concrete Bridge in Piedmont, Cal. By W. P. Day. Illustrated. 21-2 pp., Engineering News, Sept. 14. 15 cts.

Pratt Street Bridge, Baltimore. Illustrated. 11-2 pp., Engineering Record, Sept. 30. 10 cts.

Western Road Viaduct in West Toronto. Description of construction. Illustrated. 31-2 pp., Contract Record, Sept. 13. 20 cts.

Fir, Properties of Douglas; A Study of a Structural Timber. Illustrated. 21-2 pp., Engineering News, Sept. 28. 15 cts.

Steel Plates, Tests of the Strength of Flat. Abstract of Bulletin of Rensselaer Polytechnic Institute. By T. A. Bryson. Illustrated. 2 pp., Engineering News, Sept. 28. 15 cts.

Cement Mortar, Effect of Hydrated Lime on Portland. By Harry Gardner. 11-3 pp., Engineering Record, Sept. 9. 10 cts.

Creosoting, The Roping Process of. 1 p., Contract Journal, Sept. 13. 20 cts.

Concrete Structures in Boston Harbor, Conditions of. Communication from S. C. Willis. 3/4 p., Engineering Record, Sept. 23. 10 cts.

Destruction of Concrete Through Expansion and Contraction. By A. H. White. 3 1/2 pp., Concrete, September. 15 cts.

Some of the Properties of Oil-Mixed Portland Cement Mortar and Concrete. By L. W. Page. Illustrated, 15 pp., Proceedings American Society of Civil Engineers, September. \$1.00.

Tar, The Co-Efficient of the Expansion of. By J. M. Weiss. 3 pp., Journal Franklin Institute, September. 50 cts.

Sulphur in Tar Residues. Paper before American Society for Testing Materials. By Prevost Hubbard and Chas. S. Reeves. 3/4 p., Surveyor, Sept. 15. 40 cts.

MISCELLANEOUS

Rails, Corrugation of Tramway. Its origin and production. Paper before British Association for the advancement of Science. By W. Worby Beaumont. Illustrated, 11-2 pp., Contract Journal, Sept. 6; Illustrated, 2 pp., Sept. 13. 20 cts.

Composite Rails for Chicago Street Railways. By W. A. Del Mar. Illustrated, 3-4 p., Engineering News, Sept. 28. 15 cts.

Tramways, London's Municipal. 1-4 p., Municipal Journal, Sept. 27. 10 cts.

Clearance Dimensions of Rapid-Transit Subways and Tunnels. Illustrated, 1 p., Engineering News, Sept. 21. 15 cts.

Subway, Concrete Work on Fourth Avenue, New York. Illustrated, 2 pp., Contractor, Sept. 15. 20 cts.

Construction of Paris Subway Over Old Gypsum Quarries. Illustrated. 2-3 p., Engineering News, Sept. 21. 15 cts.

Concrete Mixer, Electric Car for. Illustrated, 1 p., Municipal Journal, Sept. 13. 10 cts.

Cofferdam, Large, Built with Steel Sheet Piling at North End of La Salle St. Tunnel, Chicago. Illustrated, 1-2 p., Engineering News, Sept. 21. 15 cts.

Clearing and Grubbing, Methods of. 1 p., Engineering and Contracting, Sept. 6. 10 cts.

Contracting Practice. By D. V. Moore. 4 pp., Municipal Engineering, October. 25 cts.

Departmental versus Contract Work. Editorial. 3-4 p., Contract Journal, Sept. 13. 20 cts.

Requirements and Theory of the Advertisement or Notice to Bidders on Contracts for Public Works. By Jerome Cochran. 2 pp., Engineering News, Sept. 14. 15 cts.

Specifications, New Orleans, in Relation to Failure to Secure Satisfactory Bids from Contractors. Communication from H. L. Hutson. 2-3 p., Engineering News, Sept. 21. 15 cts.

Inspection of Concrete. Paper before Canadian Cement and Concrete Association. By E. A. James. 3 pp., Cement, August. 25 cts.

The Use and Abuse of Inspection. 1-3-4 pp., Canadian Engineer, Sept. 7. 15 cts.

Labor, Argument on Alien. Before County Court of Orange County, New York. By C. W. McKay. 6 pp., Bulletin, General Contractors' Association, September.

Engineer, The Municipal. 1-2 p., Fire and Water, Sept. 6. 10 cts.

Municipal Engineering as a Profession. Paper before Institution of Municipal Engineers. By B. Wyand, 11-2 pp., Canadian Engineer, Sept. 28. 15 cts.

Benchmarks in New York City, Types of Standard. 1-2 p., Engineering News, Sept. 21. 15 cts.

Earth Pressures. Pressures on retaining walls. Paper before Western Society of Engineers. By Chas. K. Mohler. Illustrated, 61-2 pp., Canadian Engineer, Sept. 7; Illustrated, 31-2 pp., Sept. 14. 15 cts.

Surface Caving over Mine Excavations, Report on the Protection of the City of Scranton from. Illustrated, 31-2 pp., Engineering News, Sept. 21. 15 cts.

Blueprints, Hangers and Rack for. By O. H. Basquin. Illustrated, 1-2 p., Engineering News, Sept. 21. 15 cts.

Public Utility Statistics. From California Municipalities. 3 pp., Pacific Municipalities, August. 20 cts.

Small Public Service Properties and Their Future. By W. S. Barstow. 10 pp., Journal Franklin Institute, September. 50 cts.

Appraisal of the Chicago Telephone Company and Determination of Fair Rates of Charge. 3 pp., Engineering and Contracting, Sept. 13. 10 cts.

Field Inspections of Public Service Industries in Wisconsin. B. J. H. Roemer. Paper before Illinois Gas Association. 21-2 pp., Municipal Engineering, October. 25 cts.

Municipal Ownership in California. 1-4 p., Municipal Journal, Sept. 13. 10 cts.

Government in Europe, Forms of Municipal. By Mayor R. W. Speer, Denver, Col.

Illustrated, 7 pp., Municipal Engineering, October. 25 cts.

Accounting and Efficiency. Paper before International Municipal Congress. By H. R. Sands. 2 pp., Engineering Record, Sept. 30. 10 cts.

Physical Records of Municipalities. Paper before American Society of Municipal Improvements. By Ernst C. Meyer. 1 p., Municipal Journal, Oct. 4. 10 cts.

Municipal Data and Records. 3/4 p., Municipal Journal, Oct. 4. 10 cts.

Budget Exhibit, New York. 3/4 p., Municipal Journal, Oct. 4. 10 cts.

Municipal Congress and Exposition, Chicago. 1/2 p., Municipal Journal, Oct. 4. 10 cts.

Town Planning in Germany. By T. C. Horsfall. 1 p., Municipal Journal (London), Aug. 26. 15 cts.

Town Planning Suggestions for Canadian Municipalities. From address before Ontario Municipal Association. By J. P. Hynes. 3/4 p., Contract Record, Sept. 20. 20 cts. 3/4 p., Canadian Engineer, Sept. 21. 15 cts.

Town Planning in Ireland. By P. C. Cowan. 1 1/2 pp., Surveyor, Sept. 1. 40 cts.

To Plan a Capital City. 3/4 p., Municipal Journal, Oct. 4. 10 cts.

Some Rudimentary Ideas on Town Planning. By H. Shillington. Town Surveyor, Lurgan, Can. 3/4 p., Contract Record, Sept. 13. 20 cts.

Town Planning of a Modern City from an Engineer's Point of View. Paper before Royal Sanitary Institute Congress. By Chas. Brownridge, Borough Engineer, Birkenhead. 1 1/2 pp., Surveyor, Sept. 8; 2 pp., Sept. 15. 40 cts.

Seaports, Physical Characteristics of European. From report by C. W. Staniford, Chief Engineer Dept. of Docks, N. Y. 1 p., Engineering Record, Sept. 16. 10 cts.

Technical Index, An International. 1 p., Engineering Record, Sept. 30. 10 cts.

Playground Directors; Sources from which they may be secured. By C. W. Hetherington. 6 pp., Playground, October. 25 cts.

Design of Concrete Fountains and Pools for South Park, Chicago. Methods and costs of construction with glue molds. By C. C. Anthony. Illustrated, 2 1/2 pp., Engineering & Contracting, Sept. 20. 10 cts.

Recreation Movements; Its Possibilities and Limitations. By G. T. Kirby. Illustrated, 8 pp., Playground, October. 25 cts.

Baths, Wood Green. Illustrated. 1 1/2 pp., Municipal Journal (London), Aug. 26. 15 cts.

BOOK REVIEWS

Good Engineering Literature.—By Harwood Frost. Published by the Author. 420 pp., 5 by 7 1/2, cloth. Price, \$1.

The material in the book is an elaboration of a series of lectures delivered by the author to engineering students. The author is an editor of experience, connected with engineering magazines and an author as well. Four introductory chapters deal with questions of grammar, rhetoric and a discussion of the use of common and technical terms. In stating the motive in literary work and the essentials to success, the importance of quality rather than quantity is emphasized. The author might have gone further and stated that the bulk of engineering literature is so great that no man can read all that is written pertaining to his own specialty. The manner of stating the facts and getting them into print is what the book particularly deals with. The preparation of manuscripts for publication forms an important chapter; it is based on the practice that has prevailed with the publishers of the "Engineering News," but does not differ essentially from the practice of any good publisher. A digression is made into the domain of ethics and it is found that the mere "write up" article in a technical magazine is a bad thing—to say nothing of its conflicting in a way with the interests of the advertising department. The rights of authors in their work and the giving of credit for draft in the literary work of others—a delicate subject—is well treated. The copyright laws are stated. The relations between author and publisher are stated in a way valuable to the former, at least. Two chapters dealing with the making of the book, illustrations, typographical work and binding, show the familiarity of the author with the subject. A long chapter on indexing and filing should interest the engineer. The decimal classification is favored. Under the caption Engineers' Library, some good advice is given in the selection of books and literature. The book covers a wide field, concerning both the makers of books and those who read them. The information contained seems of most value to the former.

NEWS OF THE SOCIETIES

International Municipal Congress and Exposition.—The exhibits shown at the International Municipal Congress and Exposition in Chicago during the two weeks of September 18 to 30 were attractively arranged and calculated to give any intelligent visitor an excellent idea of the latest developments in street paving and pavement construction, street cleaning and lighting, fire apparatus, police department equipments, water works and sewerage appliances, the various appliances used in municipal offices, voting machines, and many other appliances and services employed by municipalities.

Paving materials were shown as follows: American Asphaltum and Rubber Company showed samples of Pioneer road asphalt, paving cement, block pavement filler, mineral rubber pipe coating, waterproofing asphalt, etc. The Barber Asphalt Paving Company showed samples of Bermudez and Trinidad refined asphalts, road asphalt, liquid asphalt, and the application of asphalts to sheet asphalt pavements, asphaltic concrete and penetration methods. The Standard Asphalt and Rubber Company displayed their "Sarco" products, including the Sarcolithic or mineral rubber pavement; coating for metal water pipes; block pavement fillers, etc. The Standard Oil Company advertised the use of its products for the treatment of roads by the penetration method and other forms of bituminous road construction. Warren Brothers Company showed samples of bitulithic pavement and of their new Bitucrete pavement, especial attention being called in connection with the former to the grading of the aggregate. The American Association of Creosoted Wood Block Manufacturers, a recent organization of four or five manufacturers to develop the wood block paving industry, showed samples of creosoted block, including one laid in Galveston, Tex., in 1875, and taken up in 1909. The Yellow Pine Manufacturers' Association, of St. Louis, showed samples of Southern yellow pine in the form of paving blocks, illustrating both good and defective blocks. The Central Westrumite Company, of Chicago, advertised by literature and photographs the use of Westrumite road surfacing. The Wisconsin Lime and Cement Company, of Chicago, exploited in their booth the material employed by them as being economical and sanitary.

The Austin Western Company, of Chicago, had on exhibition the Austin road roller, to be operated with any kind of liquid fuel, and which is made in 7, 8, 10, 12 and 15-ton sizes. The Baker Manufacturing Company, of Chicago, manufactures the Twentieth Century grader and snow plow, Twentieth Century road drag, Plano road drag; also dump carts, street cleaning machines and wheel scrapers. The Briggs Labor Saving Specialty Company, of Waterloo, Ia., exhibited a motor-driven street sweeping machine, an asphalt wagon, a bottom dump concrete spreader and both horse and hand concrete carts. The Iroquois Iron Works, of Buffalo, N. Y., exhibited a five-ton tandem asphalt roller, and also advertised their steam road rollers up to 15 tons, portable asphalt melting kettles and numerous paving tools for asphalt work, and showed photographs of railroad asphalt plants, and stationary, semi-portable and small portable asphalt macadam and repair plants. The Kelly Springfield Road Roller Com-

pany, of Springfield, O., exhibited their steam and gasoline road rollers and also rollers for asphalt pavements. The Tiffin Wagon Company, of Tiffin, O., exhibited an air pressure street flushing machine, a street sprinkling wagon of the older type, a bottom dumping wagon and a steel sanitary cart for municipal work. Warren Brothers Company, of Boston, had on exhibition one of their portable asphalt paving plants, one of the largest pieces of machinery in the exhibit. This was their newer plant, simpler in construction than those used some years ago.

Probably because the concrete machinery manufacturers preferred to advertise in the cement shows there were very few concrete mixers to be seen at the exhibit, and no cement manufacturers were represented. The only concrete mixers were those of the Knickerbocker Company, of Jackson, Mich., which showed one of their well-known Coltrin continuous batch mixers, containing a few minor improvements over the models of previous years, and one manufactured by the Milwaukee Concrete Mixer and Machinery Company, of Milwaukee.

The street cleaning machinery exhibited comprised the well-known Squeegee washer manufactured by the Kindling Machinery Company, of Milwaukee, which aims to combine the sprinkler, sweeper and scraper; the pressure street flushing machine manufactured by the Sanitary Street Flushing Machine Company, of St. Louis, which has a water capacity of 600 gallons, and the pressure flushing machine of the Tiffin Wagon Company, previously referred to.

The Acorn Brass Manufacturing Company, of Chicago, had on exhibition full-sized samples of their street lamps, standards, etc., as had also the Sun Vapor Street Light Company, of Canton, O., which showed Gasolabra street lamps of 1,000 candlepower, and the Western Gas Construction Company, of Fort Wayne, Ind., which showed in their booth a number of their Fort Wayne Ionic standards with bronze statuary finish and fitted for from one to five lamps each. The Commonwealth Edison Company, of Chicago, showed in a unique way on a large map of Chicago the locations of its generating and sub-stations by the use of tiny incandescent lights; also types of ornamental standards used and photographs of generating stations and many of its plants.

Fire apparatus was shown by the Knox Automobile Company, of Springfield, Mass.; the Nott Fire Engine Company, of Minneapolis, Minn., and the Webb Motor Fire Apparatus Company, of St. Louis. The Knox and Webb apparatus shown were motor driven, the Webb motor fire engine being exhibited during the second week only, it having been on exhibition at the Milwaukee Fire Chiefs' convention during most of the first week. The Nott Company showed a universal third-size horse-drawn steam fire engine with some new features, and also a motor-propelled steam fire engine recently rebuilt for Birmingham, Ala.

The Dahlstrom Metallic Door Company, of Jamestown, N. Y., exhibited fireproof fittings of hollow metal and glass, especially metallic door and window casings. The F. P. Smith Wire and Iron Works, of Chicago, showed fire escapes and other metallic fireproof construction for buildings. Voigtmann & Co., of Chicago, advertised their automatic fire windows. The Hendee Manufacturing Company recommended

their Indian motor cycles for fire department and police service. The Hub Clothing Company, of Chicago, manufacturers of uniforms for firemen and police, displayed samples of various styles of uniforms. The Hydraulic Oil Storage Company, of Detroit, Mich., advertised their methods of safe storage, both evaporation and fireproof, of gasolines and oils. The Pyrene Manufacturing Company advertised their Pyrene fire extinguishers, a fluid for emergency use. The Chicago Board of Fire Underwriters gave instruction to all visitors in the precautions recommended for reducing fire losses and preventing fires.

The Dean Electric Company, of Elyria, O., displayed their police patrol flashlight system, showing a police headquarters switchboard connected with police patrol boxes so that patrolmen may communicate with headquarters or headquarters call the patrolmen.

The Pitometer Company, of New York, had in its booth a working exhibit showing the operation of this meter for measuring flow in pipes, indicating pump slip, etc.

The Cameron Septic Tank Company distributed literature setting forth its claims to collect royalty on septic tanks. James B. Clow & Sons, of Chicago, showed sanitary supplies, including bubbling cup drinking fountains, sewer castings, etc. The McCrum-Howell Company, of Chicago, showed the Richmond sanitary heating appliances, including vacuum cleaning system, heating system, bathroom fittings, etc. W. H. Stewart, of St. Louis, had on exhibition a complete sewer cleaning outfit, such as has been employed by him in scores of cities in cleaning obstinate cases of sewer obstruction. The United States Chemical Company and the West Disinfecting Company, both of Chicago, each advertised their chemicals and sanitary devices for use in toilet rooms, the latter also showing its liquid soap dispensers and sanitary drinking fountains.

The Green Engineering Company, of Chicago, had on exhibition a full working model of the Green chain grate stoker. The International Automatic Valve Company, of Chicago, advertised its automatic valves and other products. The New York-New Jersey Lubricant Company advertised its lubricants. The Palm Vacuum Cleaner Company showed three types of its piston pumps for use in small or large buildings; also a vacuum cleaner system.

The Addressograph Company, of Chicago, gave exhibitions of its machines for heading bills, addressing envelopes, making out payrolls, etc. The Burroughs Adding Machine Company, of Detroit, had on exhibition its adding, listing and calculating machine especially designed for accounting, together with other adding machines. The Chicago Shipping and Receipt Book Company advertised its loose leaf binders and public record loose leaf index for use by county, city and State offices. The Columbia Phonograph Company exhibited new models of Dictophones for use in public offices. The Dalton Adding Machine Company, of Poplar Bluff, Mo., showed adding, listing and calculating machines, both hand and electric drive. Office furniture was displayed by the Derby Desk Company, of Chicago. The Elliott-Fisher Company, of Harrisburg, Pa., showed its writing-adding machines, writing tax bills in triplicate and adding the same, a machine for recording public records in bound books, etc. The Felt and Tar-

rant Manufacturing Company, of Chicago, exhibited its comptometers designed especially for the offices of city auditors, treasurers, water departments, etc. Tabulating machines were also shown by the Statistical Service Company, of Chicago. Typewriters were advertised by the Monarch Typewriter Company, showing a typewriter accommodating paper 32.6 inches wide; the Remington Typewriter Company, including adding machines, and the Smith-Premier Typewriter Company. The Egry Register Company, of Dayton, O., showed devices for manifolding, autograph registers and other office appliances.

The Egry Register Company also showed the Dayton voting machine. The Empire Voting Machine Company, of Jamestown, N. Y., had on exhibition an Australian ballot voting machine which could be operated by the visitors to demonstrate its flexibility. A voting machine was similarly shown by the International Voting Machine Company, of Elgin, Ill., and also by the Triumph Voting Machine Company, of New York.

Several publications had booths at the exposition, namely, the *American City*, of New York; the *Canadian Engineer*, of Toronto; the *Canadian Municipal Journal*; *Engineering and Contracting*; the publications of Hugh C. MacLean, Ltd., of Canada; *Municipal Development*; *Municipal Engineering*; *MUNICIPAL JOURNAL AND ENGINEER*, and *Town Development*.

Among the miscellaneous exhibits were those made by the Arnold Engineering Company, of Chicago; H. M. Byllesby & Co.; the Hess Warming and Ventilating Company, of Chicago; Robert W. Hunt & Co., of Chicago, inspection tests; the Imperial Brass Manufacturing Company, of Chicago, municipal bath fixtures; the H. W. Johns-Manville Company, of New York, asbestos pipe and boiler coverings, packings, underground conduits, etc.; Ludowici-Celadon Company, of Chicago, terra cotta roofing tile; the Monarch Vacuum Cleaner Company, of New York; the Strauss Bascul Bridge Company, of Chicago, and the Troy Laundry Machine Company, of Chicago.

Massachusetts State Firemen's Association.—At a recent meeting of the general committee on entertainment at Lawrence, Mass., the following arrangements for the convention were agreed on:

Wednesday, Oct. 18, the opening day of the convention, the committee will greet and take care of the delegates as they arrive and look after their every comfort. In the evening a hose laying contest for local volunteer fire companies, such as mill and shop brigades, will be held near the City Hall on Common street. Arc lights will be installed, together with a searchlight, for this event. The volunteers will be timed in running 100 yards with a hose reel, laying a line of hose, coupling up with the hydrant and coupling on a nozzle.

Thursday afternoon at 2.30 o'clock the Boston and Lawrence fire departments will clash in a baseball game on the playstead. A band concert will be played during the ball game. During the afternoon the ladies who accompanied the delegates will be given an automobile trip throughout the city and suburbs. In the evening there will be a monster campfire in the State armory.

Friday noon at 12.30 o'clock a parade of the entire local department, men, ap-

paratus, etc., will be held, starting at the Central fire station on Lowell street and going over the following route: Lowell street to Lawrence to Essex, to Union, countermarch to Broadway, to Haverhill, to Jackson, to Common. The Mayor, Board of Aldermen, honored guests and delegates will review the parade from the City Hall steps on Common street. The apparatus will be dismissed at this point.

At 3.30 o'clock Friday afternoon there will be sports and a continuous band concert on the playstead.

American Association for Highway Improvement.—One of the interesting features of the convention to be held at Richmond, November 20, will be an exhibition of moving pictures illustrating advantage of good roads over bad. Most interesting of all will be the films showing how the isolation of country districts is wiped out by the building of new roads or the improvement of the old ones. Farmers will be shown struggling over bad roads, sick from the strain, the doctor unable to reach them and finally the undertaker unable to get them to their graves. There will be shown in contrast the farmer who enjoys good roads, hauling big loads comfortably, getting sick in comfort, the doctor reaching him easily, and he will be seen on his porch watching his neighbor go to his grave smoothly and without hitch.

The danger of bad roads to automobilists will also be shown in moving picture form and will particularly appeal to hundreds of tourists who will attend the sessions of the Touring Club of America.

Calendar of Meetings

- October 9-13.**
American Electric Railway Association.—Annual Convention, Atlantic City, N. J.
 —H. C. Donecker, Secretary, 29 W. 39th St., N. Y. City
- October 11-12.**
League of Kansas Municipalities.
 Topeka.—Prof. R. R. Price, Secretary, Lawrence, Kan.
- October 17-19.**
American Railway Bridge and Building Association.—Annual Convention, St. Louis, Mo.—C. A. Lichty, Secretary, C. & N. W. Ry., Chicago, Ill.
- October 18-20.**
American Gas Institute.—Annual Convention, St. Louis, Mo.—A. C. Beadle, Secretary, 29 W. 39th St., N. Y. City.
- November 13-16.**
National Municipal League.—Annual Meeting, Richmond, Va.—Chilton Rogers Woodruff, Secretary, 705 North American Building, Philadelphia, Pa.
- November 15-17.**
League of Nebraska Municipalities.
 Omaha, Neb.—R. C. Ozman, Secretary, Lincoln, Neb.
- November 20-24.**
American Association for Highway Improvement.—First Annual Convention, Richmond, Va.—Logan Waller Page, President, United States Office of Public Roads, Washington, D. C.
- November 24-25.**
New Jersey Sanitary Association.—Annual Meeting, Lakewood, N. J.—J. A. Exton, Secretary, 75 Beech St., Arlington, N. J.
- December 4-9.**
American Public Health Association.—Annual Convention, Havana, Cuba.—William C. Woodward, M.D., Secretary, District Bldg., Washington, D. C.
- January 29-February 3, 1912.**
Second Annual New York Cement Show.—Madison Square Garden.—J. P. Beck, General Manager Cement Products Exhibition Co., 72 W. Adams St., Chicago, Ill.
- February 21-28.**
Fifth Annual Chicago Cement Show.—Coliseum.—J. P. Beck, General Manager Cement Products Exhibition Co., 72 W. Adams St., Chicago, Ill.
- March 14-21.**
First Annual Kansas City Cement Show.—Convention Hall.—J. P. Beck, General Manager Cement Products Exhibition Co., 72 W. Adams St., Chicago, Ill.

PERSONALS

ANDREWS, E. M., Oakdale, N. Y., has been appointed Assistant Superintendent of Highways for town of Union.

BENSEL, JOHN A., State Engineer of New York, has been named as representative of New York City at the convention of Atlantic Deeper Waterways Association, to be held at Richmond.

BROWN, THOMAS E., Westervly, R. I., who has been Deputy Chief of Police for twelve years, has been elected by Town Council head of the department, succeeding the late Capt. Bransfield, who died about three weeks ago. Mr. Brown's promotion caused a vacancy that was filled by the appointment of Edward E. West as Deputy Chief.

CHADWICK, MAYOR J. E., Montgomery City, Mo., who has been Mayor of the city for twenty years, will retire.

CONNOLLY, MAURICE E., City Magistrate of Queens, has been elected Boro President, to succeed Lawrence Gresser.

CRAVEN, ALFRED, New York, N. Y., has been appointed Chief Engineer of the Public Service Commission.

EPHLAND, R. J., Billings, Mont., has opened an office in Forsyth, Mont., for the general practice of engineering.

GIBBONS, JAS. E., has resigned his connection with the New York Board of Water Supply, where he has been engaged on the Hudson River siphon and is now in charge for the city of the work on the Fourth avenue subway in Brooklyn.

GILSON, L. P., Milton, Fla., has been elected Mayor.

HANSEN, PAUL, State Sanitary Engineer of Kentucky, has been appointed associate in sanitary engineering at the University of Illinois and Engineer to the Illinois State Water Survey.

McGEE, J. H., Marcus, Wash., a former Alderman, has been chosen by the Council as the new Mayor, succeeding F. B. McKeehan, resigned.

McMONAGLE, JOHN, West Hoboken, N. J., was elected Chief of the Fire Department and Charles Kramer Assistant Chief.

MEANOR, SAM S., Wichita, Kan., has resigned as Chief of Police.

MEAGAN, WM. A., Lawrence, Mass., chairman of Board of Health, has tendered his resignation to Mayor Cahill, giving as cause impaired health.

RICHARDS, C. R., has been appointed professor of engineering at University of Illinois and A. M. Buck assistant professor of railway electrical engineering.

SHERRED, MORRIS R., Newark, N. J., Chief Engineer Department Public Works, has been named by Governor Wilson as one of the State Delegates to attend Atlantic Deeper Waterways Association at Richmond, Va., in October.

THOMPSON, MAYOR W. C., Chattanooga, Tenn., is confined to the West-Ellis Hospital, overcome by the strain of official duties.

WADE, JOHN F., Bristol, Conn., by a margin of ten votes won out as Mayor in the election last week.

WATKINS, W. E., Jackson, Ga., County Attorney, is acting as Mayor for the unexpired term of Hon. W. M. Fletcher, resigned.

WINN, W. S., Chattanooga, Tenn., has opened an office in the James Building to conduct a general engineering and contracting business. He has been United States Assistant Engineer on Tennessee River improvements near Chattanooga.

MUNICIPAL APPLIANCES

Sun Gasolabra

The Sun Street Light Co., Canton, Ohio, manufacture a series of ornamental lighting posts for gas lights. In its catalogue the company states that heretofore decorative or ornamental lighting of public thoroughfares has been confined almost entirely to cities provided with electric current, even though gas may have been at the same time procurable. This fact is explained on the theory that there has been no competition in gas ornamental street lighting "worthy of the steel" of the electric interests and consequently they have had a practical monopoly. It is this deficiency that the Sun company aims to supply in bringing out its Gasolabra. The claim is made that by the use of this device more actual candlepower can be produced than by tungsten-electric lights and that a better diffusion of light is obtained.

Tungsten electric lamps at present used for ornamental lighting are of either 40, 60 or 100 watts, being equivalent to 32, 48 or 80 candlepower, respectively. Consequently a five-lamp electric standard is limited to the production of 400 candlepower. The Sun Gasolabra, it is claimed, using manufactured gas of ordinary pressure, will produce 75 candlepower per single burner, or 150 candlepower for each of the double burner lamps on top of the ornamental standards, so that a five-lamp standard will produce 750 candlepower. If natural gas of ordinary pressure is used each burner will produce 100 candlepower per single burner or 200 candlepower for each of the double-burner lamps, which is equivalent to an illumination of 1000 candlepower for each five-lamp standard.

The Sun Gasolabras are made in a variety of patterns, carrying from one to five lamps. All closely follow the design of the five-lamp standard shown in the illustration. The specifications for this gasolabra are as follows:

Bottom of base (ground line), 24 in. x 24 in.; bottom of fluted shaft (diameter), 9½ in.; top of fluted shaft (diameter), 6½ in.; spread of arms, center to center of side globes, 33 in.; spread of arms, extreme points, 44 in.; side globes, diameter 12 in., fitter 8 in.; center globe, diameter 14 in., fitter 6 in.; size of door in base, 8¼ in. x 9 in.; standard height to top of center globe, 13 ft. 2 in. Furnished with single or double burners. Standards and tops interchangeable. Height of column can be varied without materially affecting cost.



Adding Machine

THE Burroughs Adding Machine, manufactured by the Burroughs Adding Machine Company, Detroit, Mich., is essentially an adding and listing machine. As wider fields for its usefulness have been developed, the makers state, it has been found so well adapted to do so many different things in accounting work that it has earned the name "Burroughs' Bookkeeping Machine." At the recent International Municipal Congress at Chicago, Ill., the company showed a variety of machines, and the attendants explained how savings in various municipal departments could be effected by their use. The machines are made in different sizes, with six, seven, nine, eleven, thirteen, fifteen and seventeen columns of keys. Printing carriages are built to accommodate paper 2 15-16, 10¼, 12¼ and 18 inches wide. They are equipped for adding and listing dollars and cents, feet and inches, fractions of ¼, ⅛, 1-16, 1-32, 1-64, hours and minutes, tons and hundred-weights, dates and amounts. They may have a split and normal device for dividing the keyboard into two or more sections, for adding and listing two or more sets of figures at one operation. They can be equipped with shuttle or cross tabulating carriages for automatically listing and adding across a sheet or form in two or more columns. They may be built with two sets of total wheels, to accumulate two separate totals at the same time. They will print one or more carbon copies, as desired.

Gasoline Tractor

THE Bates Tractor Company, Lansing, Mich., manufacture a gasoline tractor of 25 to 30 horsepower capacity which is suitable for general hauling purposes. The specifications for the machine are as follows:

Engine is two-cylinder opposed; 35 horsepower at 500 revolutions per minute.

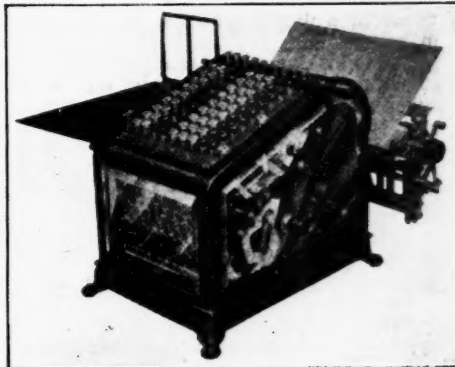
Crank case is very strong and rigid and is firmly bolted to the main sills

of the tractor. It also is dustproof, protecting the entire working parts.

Crank is made of 40-point carbon steel, proportioned like that of stationary engines. It is also provided with oil discs for the purpose of oiling the crank pins, which are proportionately large.

Connecting rods are of the I-beam type, provided with babbitt on the crank pin end and bronze on the end that operates in the piston. Very large bolts are used in connecting to the crank shaft properly annealed to prevent crystalizing.

Piston is very long, provided with five rings and hinged to the connecting



BURROUGH'S ADDING MACHINE

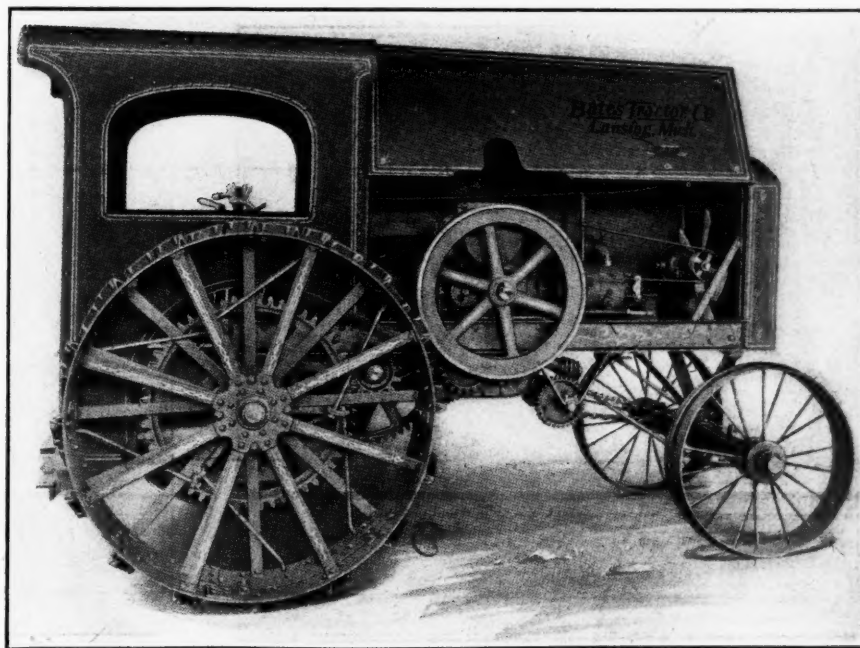
rod in the middle of the wearing surface, equally distributing the wear.

Cylinders are cast separate from the crank case and cylinder head, extremely simple and very cheap to replace.

Cylinder heads are cast separate from the cylinder, in which induction and exhaust valves operate, thoroughly circulated with water.

Packing—To avoid the characteristic trouble in connecting the heads of the cylinders corrugated copper is used.

Valves are cast iron, firmly connected to steel stems operating in long guides, which insure perfect alignment after years of service. The valve head on which the valve gear operates is of hardened steel.



GASOLINE TRACTOR FOR GENERAL HAULING

Valve gear is extremely simple, employing one cam and two valve rods to mechanically operate four valves.

Governor is arranged on the cam shaft and is of large diameter, giving a high periphery speed, which insures good control. The governor stem passes through the cam shaft, operating on the throttle, all of which are in a dustproof case and run in oil.

Carburetor is specially designed. Igniter is jump spark.

Cooler is of the automobile type, arranged with interchangeable cooling sections and holds 12 gallons of water.

Fan is 24 inches in diameter, ball bearings, driven by a belt from the governor case through a set of bevel gears in a dustproof case and running in oil.

Transmission is arranged in the lower part of the crank case, which insures perfect alignment at all times, and is provided with two speeds forward and reverse, all of which are in a dustproof case and run in oil, which has served its purpose in oiling the working parts of the engine.

Speeds—1 and 2½ miles per hour. A higher speed can be maintained by increasing the speed of the engine.

Gears are all steel.

Friction clutch is of the periphery type of large diameter provided with one adjustment only. The use of springs has been avoided.

Positive clutches are in the transmission case running in oil and arranged so as not to be engaged or disengaged when the friction clutch is in service, also provided with means preventing the use of more than one speed at a time.

Drive wheels are 60 inches in diameter with 18-inch rim. Spokes are flat steel bars firmly riveted to the rim and steel hub. Cone or cleat lugs are provided.

Master gear is of steel 36 inches in diameter with 4-inch face, provided with teeth of 2-inch pitch.

Front axle is constructed of channel steel, well trussed and fitted with steel skains.

Rear axle is constructed of steel of the live type revolving in long steel boxes lined with babbit.

Pulley: Engines are provided with a

friction clutch pulley to operate belt-driven machinery.

Controlling levers, including the steering wheel, speed changing wheel and clutch, spark and throttle levers are arranged on one column within a radius of 12 inches, providing the most complete controlling system. The speed of the tractor can be changed from forward to reverse as quick and easy as a steam tractor.

Throttle lever operates directly on the governor, changing the speed from 300 to 700 revolutions, making it possible for the engine to receive a full explosion at its minimum speed. By this system the tractor can be driven very slow and at the same time exert a maximum tension on the draw bar. The dimensions are: Length, 13 feet 4 inches; width, 7 feet 6 inches; height, 8 feet 6 inches; weight, 8,000 pounds; capacity of gasoline tank, 18 gallons.

Enclosed-Flame Arc Lamps

The increasing demand for better general illumination and the marked advances in the art of manufacturing highly efficient electrodes, made possible by the discoveries and proper combinations of suitable materials, have resulted in the design and manufacture by the General Electric Company of a complete line of Type K, long-life, enclosed-arc lamps.

The remarkable illuminating efficiency obtained from the impregnated or so-called flame carbon electrodes, together with the simplicity of the lamp mechanism, renders it suitable for the illumination of large areas.

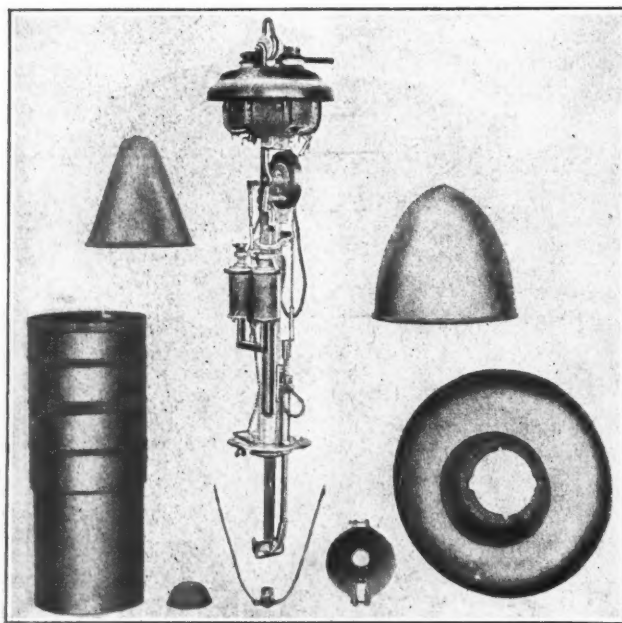
The lamps are so designed as to admit of the use of any of the standard makes of carbons now available, thereby making possible the selection of carbons best suited to individual requirements of illumination. The complete line of Type K, enclosed-flame arc lamps comprises designs for operation on all classes of commercial service. In external appearance the Type K lamps are identical, with the exception of the variation in length. The mechanisms are of the focusing type, the arc being kept in a fixed position in the enclosing globe, thus insuring an even distribution of light throughout the life of the carbon. The clutch is of the triple cam type, the jaws of which always operate

on machined surfaces, which insures a proper arc length regardless of the variations in carbon diameter. In trimming only one new carbon is required, the stub of the upper carbon being utilized as lower for the next trim. The casings are made of either copper or steel and are of the telescoping type, which admit of ready examination of the lamp mechanism. The hot gases rise from the enclosed-arc stream and circulate through the condensing chamber, where they are cooled. The fumes are condensed and deposited in the condenser, which insures the absence of deposit on the surface of the globe.

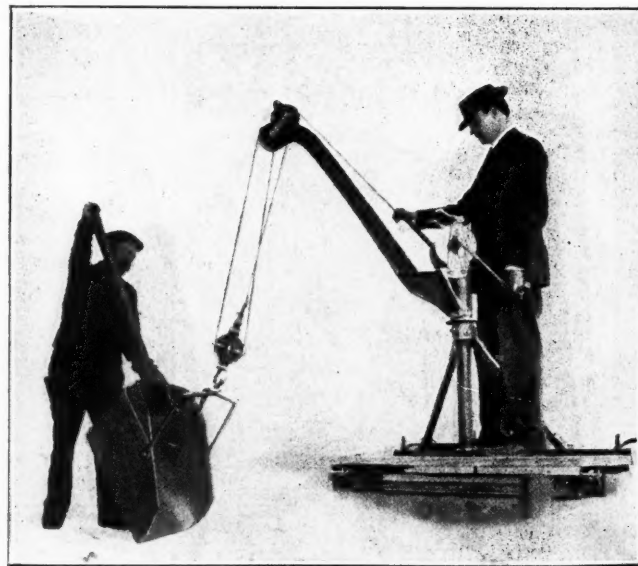
The illustration shows the interior of the Type K-36, multiple alternating-current, enclosed-flame arc lamp for operation singly on 40 to 60-cycle, alternating-current, multiple circuits of nominally 110 volts. The current consumption is 7—7.5 amperes and the life per trim, 100 to 120 hours. The casing, globes, condenser, economizer and supporting bail are shown disassembled to illustrate the simplicity of design and accessibility of parts.

Portable Derrick for Loading and Unloading Cars

JOHN L. TAYLOR, 1034 West Lake street, Chicago, Ill., manufactures a portable derrick which is claimed to be very convenient for the use of contractors in handling materials in and out of cars. This is often a troublesome proposition to contractors on account of the variety of materials to be handled, heavy objects like curb or building stones or machinery and bulky materials, such as sandstone and gravel. The portable derrick, which weighs less than 200 pounds, will aid in handling any of these. The illustration shows its use in connection with a scoop for handling bulky materials. The operator is standing on a platform which is supplied ready for attachment to a gondola car. The platform is fitted to the side of the car by castings, braces and chains. It is stated that two men can handle derrick and scoop to unload sand, gravel or coal. One man can unload 8-inch water pipe. Three men can unload one pipe a minute from gondola cars. One man is stationed inside the car to hook the pipe, one on outside to release it and one to operate derrick.



ENCLOSED FLAME ARC LAMP



TAYLOR PORTABLE STEEL DERRICK

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago: The weakness of the pig iron market seems to have discouraged some large buyers from placing orders for pipe. Quotations: 4-inch, \$26.50; 6 to 12-inch, \$24.50; 16-inch and up, \$24. Birmingham: In the absence of large contracts for early letting and with the decline in the pig iron market competition is keener. Quotations: 4 to 6-inch, \$23; 8 to 12-inch, \$22; over 12-inch, average, \$21. San Francisco: The outlook for the entire Coast is good. New York: No large public lettings are in sight, but there is a fair business with private companies.

Lead.—Lead is dull but steady. An effort has been made to advance quotations in the West, but without success. The price continues at 4.33½c., St. Louis, and 4.47½c., New York. The American Smelting & Refining Company continues to hold lead at 4.50c., New York, and outside sellers are getting the bulk of the business here. The leading interest is meeting competition in the West to some extent.

Cement.—A cut has been made in the price of Portland cement, which can now be bought in bulk at the mills of the Lehigh Valley District at 65c. per barrel. It is stated that the cement trade has never been so demoralized as at present and the price has never been so unremunerative. The New York price for cement is \$1.33 per barrel, with an allowance of 40 cents for bags returned. The price is below the cost of production for some mills.

Motorcycles.—The Hendee Mfg. Co., Springfield, Mass., states in one of its recent catalogues that the police forces of more than 100 cities use Indian motorcycles. Besides police departments municipal departments generally find the Indian motorcycle useful for inspectors, foremen and messengers.

Firestone Annual Convention.—The annual convention of the sales force of the Firestone Tire and Rubber Company was held at Akron, Ohio, September 8-9. More than 100 of the company's salesmen were present. A photograph of the group was taken in front of the company's new plant. The plant contains the largest tire building in the world, 10 acres all under one roof bringing the total floor space up to 14 acres. It is equipped throughout with the newest and most modern machinery for insuring uniformity and perfection in the finished tire. President Firestone, in his annual address to the salesmen and branch managers, submitted figures showing last year's increase in sales was the greatest in the history of the company and that the new plant will more than treble the present output.

New Contracting Company.—The firm of N. A. Middleton & Co., engineers and general contractors, 515 Continental Building, Baltimore, Md., has been organized.

Improved Concrete Blocks.—The Fisher Hydraulic Stone and Machinery Company, formerly of Mt. Gilead, Ohio, has moved its office and works to Rockford, Ill. Mr. Fisher states that the object in moving is to secure better facilities for exhibiting his machine. This machine makes blocks by ramming wet mixed concrete by powerful blows, thus driving out air and making a denser block than can be made in any other way, it is claimed.

Exporting American Machinery.—The Allied Machinery Company of America, National City Bank Building, corner of Wall and Nassau streets, New York City, which was organized a few months ago, report excellent progress. About 60 manufacturing firms in this country are directly interested in the company. The company was organized for the purpose of overcoming the difficulties which manufacturers of American machinery experience in selling machinery abroad. These difficulties arise from want of knowledge of conditions and lack of banking facilities. The offices of the company are as follows: President, Samuel McRoberts; vice-president and general manager, Godfrey L. Carden; treasurer, Thomas A. Reynolds; secretary, H. C. Newlands.

Ornamental Lamp Standards.—James Knox Taylor, Supervising Architect for the United States Government, some time since called for bids for lamp standards and brackets in iron or bronze for Washington, D. C., to be constructed in accordance with specifications prepared by him. Eight bids were submitted and the contract was awarded to the Flour City Ornamental Iron Works and Mr. Knox wrote that firm on September 26 that he considered their bid the best from every standpoint.

Street Car Fenders.—An attempt is being made in Portland, Ore., to open the street car fender question. A. E. Clark, attorney for the H. B. Universal Life Guard Company, appeared before the judiciary committee of the Council in an effort to secure a recommendation to the Council that the street car company be required to conduct tests of fenders for 60 days. In view of the fact that about a year ago the Council passed an ordinance approving the Nelson automatic fender and ordering its installation on street cars in this city, the committee avoided making any recommendation and referred the resolution to the City Council without recommendation.

Attorney Clark explained that he had heard the National Automatic Fender Company, which is manufacturing the Nelson automatic device, is unable to provide fenders for immediate installation and to the present time has only 25 cars equipped with the device. He also contended that the ordinance was so drafted that only one type of fender could be used on street railways cars in this city, which he did not think right.

New Corporations

The McCartin Pacing & Construction Co., Birmingham, Ala.; capital, \$10,000. Incorporators: John M. McCartin, president and general manager; J. P. McCartin, secretary, and A. R. Hoehn, director.

Maxant Engineering & Manufacturing Company, Chicago, Ill.; capital, \$100,000; mechanical and electrical engineering, manufacturing. Incorporators: Basil Maxant, Frank Maxant, William D. Johnson.

Baker Manufacturing Company, Chicago, Ill.; capital stock increased from \$25,000 to \$100,000.

American Traction & Power Co., Wilmington, Del.; Delaware Trust Co.; capital, \$500,000. Incorporators: F. M. Shive, S. E. Roberson, Harry W. Davis, all of Wilmington.

International Gas & Electric Co., Camden, N. J. Corporation Guarantee & Trust Co.; capital, \$1,000,000. Incorporators: F. R. Hansell, Philadelphia; Geo. H. B. Martin and S. C. Seymour, Camden, N. J.

Hydro Klar Co., Buffalo, N. Y.; manufacturing water purifying apparatus; capital, \$25,000. Incorporators: Geo. M. Carter, 1548 Jefferson street, Wilbraham Knight, 408 Winslow avenue; John B. Aikman, 156 West Chippewa street, all of Buffalo.

United Water & Guarantee Co., Dover, Del.; capital, \$1,000,000. Incorporators: J. N. Deeter, Harrisburg, Pa.; A. Grant Richwine and W. Dale Sheaffer, Mechanicsburg, Pa.; Arley B. Mages, Dover, Del.

Milwaukee Convention Sketches.

The accompanying illustration is part of plate of sketches made by Web Brown, advertising manager of the Republic Rubber Co., at the recent Milwaukee convention of the International Association of Fire Engineers. Mr. Brown will, upon request, provide a large reproduction of the complete series of sketches to any chief who desires it.



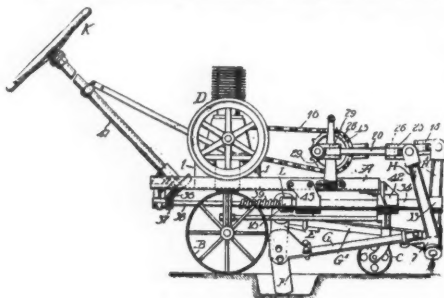
Courtesy Republic Rubber Company.

SKETCHES OF FIRE CHIEF'S CONVENTION

PATENT CLAIMS

1,004,730. MACHINE FOR CHOPPING UP ASPHALT OR LIKE PAVEMENT. Charles E. Bathrick, Chicago, Ill., assignor to Frederick C. Austin, Chicago, Ill. Serial No. 515,296.

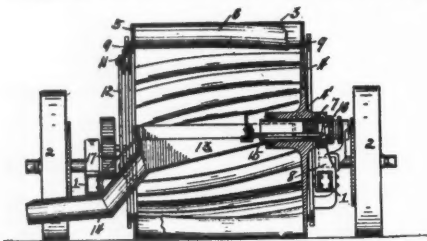
In a machine for chopping up asphalt or like pavement, a truck or carriage provided with reciprocating chopping devices,



adapted for cutting into asphalt or like pavement, means for reciprocating the choppers alternately in opposite directions, and means upon the truck or carriage for actuating the chopper operating means.

1,004,715. MEANS FOR ELEVATING AND HANDLING DIRT, SAND OR THE LIKE. Joseph J. Valliquett and Charles F. Roush, Toledo, Ohio. Serial No. 569,654. Divided. Serial No. 588,555.

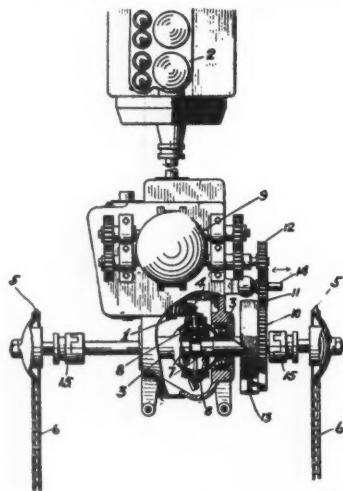
The combination with a hollow rotatable member having blades for the elevating of matter to a predetermined point, of a receptacle located within said member for catching matter elevated by the blades,



said receptacle being reciprocally movable, means yieldingly retaining the receptacle in one position of its movement, and cam means acting on a part of the receptacle for imparting reciprocatory movements thereto in one direction against the tension of said yielding means.

1,004,816. AUTOMOBILE FIRE ENGINE. John Livingston Poultney, Haverford, Pa., assignor to James Boyd & Brother, Inc., Philadelphia, Pa., a Corporation of Pennsylvania. Serial No. 568,651.

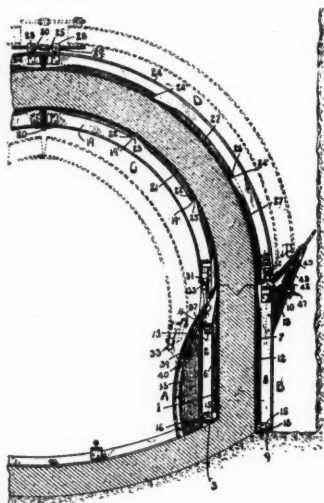
In an automobile fire engine the combination of a shaft, a change speed transmission mechanism for driving the shaft at different speeds the differential and brake sleeve driven by said shaft at dif-



ferent speeds, a wheel-driving gear driven by said shaft, a pump, means interposed between the pump and sleeve for driving the pump, and devices for connecting and disconnecting said shaft and wheel-driving gear and said sleeve and pump, substantially as described.

1,004,615. CONCRETE TUNNEL MOLDING APPARATUS. Charles H. Witt-hoeft, St. Louis, Mo., assignor to Witt-hoeft Collapsible Concrete Forms Company, St. Louis, Mo., a Corporation. Serial No. 592,787.

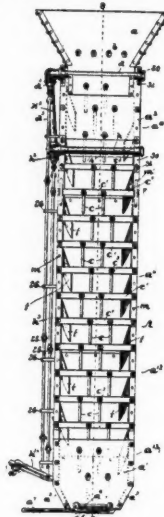
In a concrete tunnel mold, movable arch mold sections, track rails on which said



arch sections may be conveyed longitudinally of the mold, and means for lowering and raising said track rails.

1,004,029. SAND-DRIER. Foster J. Hull, New York, N. Y., assignor to The Thomas W. Pangborn Company, New York, N. Y., a Corporation of New York. Serial No. 571,610.

A drier comprising in combination a container having a perforate sustaining member, an extended heating surface in proximity to but spaced away from said mem-



ber and located on the discharge side thereof, and ribs extending through the interior space of the container and adapted to form, between their lower sides, and the material to be dried, passages for the circulation of air.

1,005,113. MEANS FOR PROTECTING RIVER BANKS. Albert Green, Westalton, Mo. Serial No. 596,627.

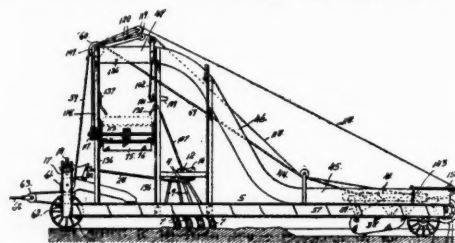
Means for protecting river banks comprising a series of piles driven into the river bottom and extending slightly thereabove, said piles being arranged with the offshore pile of the series farther up the stream than the shore pile of said series, a second series of piles extending above the water and arranged parallel with the first series, reinforcing cables connecting said piles and debris supporting cables connected to the first series and to the top of the second series.

1,004,828. CONCRETE PILING FOR BULKHEADS. Harry H. Tuthill, New Suffolk, N. Y. Serial No. 609,394.

Sheet piling of the class described, consisting of a series of similar concrete piles, a hook near the base of one pile, a loop to engage the hook on the adjacent surface of the next pile; means for guiding an unsunk pile, so that the hook and loop will keep in line and permit the foot of the pile being sunk to rest closely against the side of the already sunken pile.

1,004,549. EXCAVATING MACHINE. Leonard C. Wood, Alden, Iowa. Serial No. 581,210.

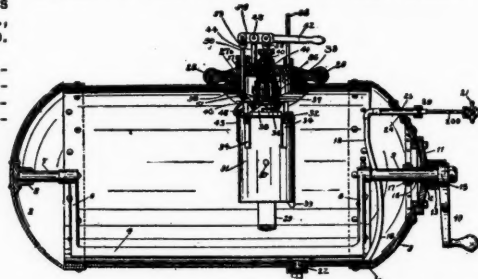
The combination with a vehicle, of a bucket mounted to travel back and forth thereon, means for imparting both the forward and rearward travel to the bucket, a pan arranged to receive the material from the bucket and to reciprocate transversely on the vehicle to discharge the material so



received, a cable having both extremities connected with the bucket, and a drum reversely connected in operative relation with the pan, the cable being connected with the drum to cause the latter to rotate in either direction depending upon the position of the drum, substantially as described.

1,004,971. FIRE EXTINGUISHER. Thomas J. Beetham, Newark, N. J., assignor to The Tea Tray Company of Newark, N. J. Serial No. 465,563.

In a fire extinguisher, the combination with a tank a cap for said tank, an acid bottle, and bottle supporting means on said cap adapted to allow said bottle to tip into inverted position, of an impact surface at the upper part of said bottle



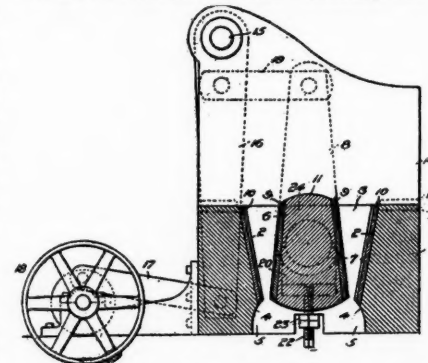
inclined to the direction of tipping of the bottle, a rod working vertically through said cap, a stopper for the acid bottle upon said rod, a plunger parallel to said rod and adapted to engage the said impact surface, and means connecting said plunger and rod so that sliding of the rod will cause the plunger to move in the opposite direction.

1,004,125. COMPOSITION OF MATTER TO BE USED FOR SURFACE COATING OF WOOD, METAL, OR OTHER MATERIAL. Frederick D. Willey, Chicago, Ill., assignor to Chicago Varnish Co., Chicago, Ill., a Corporation. Serial No. 470,567.

A composition of matter comprising aluminum powder, white lead, pumice flour, a pigment of silica and clay, varnish and Japan, substantially as and for the purpose specified.

1,004,663. ROCK-CRUSHER. John M. Landrum, East Lake, Ala., assignor of one-half to James T. Harwell, Birmingham, Ala. Serial No. 593,173.

The combination with a pair of straight inclined fixed crushing jaws, of an interposed oscillatory crushing element having straight reversely inclined crushing faces



which cooperate with said fixed jaws, means to oscillate said element, and pivoted supports therefor disposed between the top and a transverse central plane through its crushing faces substantially as described.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO.
STREET IMPROVEMENTS				
Indiana.....	Winchester.....	Oct. 13, 10 a.m.	Constructing two gravel roads.	Henry F. Wood, County Auditor.
New York.....	Buffalo.....	Oct. 13, 11 a.m.	Constructing brick driveways.	F. G. Ward, Comr. Pub. Wks.
Minnesota.....	Albert Lea.....	Oct. 13.....	Constructing 39,021 sq. ft. new concrete walk, 1,350 sq. ft. brick walk and 600 lin. ft. concrete curb; cost, \$4,244.	C. J. Dudley, City Clerk.
Ohio.....	Chardon.....	Oct. 13.....	Grading and paving with concrete 1.70 miles road in Chester township; cost \$10,649.	Jas. R. Marker, Hwy. Comr.
Wisconsin.....	Janesville.....	Oct. 14, 2 p.m.	Improving North Academy St. by paving with brick about 2,353 sq. yds. and constructing 111 lin. ft. combined cement curb and gutter.	St. Assessment Committee. County Commissioners.
Ohio.....	Warren.....	Oct. 14, 10 a.m.	Constructing 2.69 miles concrete paving.	W. H. Woodbury, Pres. Hwy. Com.
North Carolina.....	Murphy.....	Oct. 14, 2 p.m.	Grading and construct. culverts etc., Peach Tree Road.	
Illinois.....	Rockford.....	Oct. 14, 1:30 p.m.	Constr. 300 sq. yds. crescoted 4-in. paving blocks, 10,560 ft. crescoted 4-in. plank and 120 lin. ft. 6 by 8-in. crescoted timbers; 572 lin. ft. 1/2-in. by 1 1/2-in. crescoted strips.	A. E. Anderson, Chm. Pur. Com. Henry O. Snyder, Village Clerk.
Ohio.....	Ulrichsville.....	Oct. 14, noon.	Grading, draining, curbing and paving Eastport Ave.	
Wisconsin.....	Superior.....	Oct. 15.....	Constr. 3,000 lin. ft. curb; 1910 cu. yds. sand fill, 1,711 cu. yds. crushed rock and 27,177 gals. asphalt.	Dan'l. J. Arris, Pres. Bd. Pub. Wks. J. F. Goldenbogen, Clerk.
Ohio.....	Cleveland.....	Oct. 15, 11 a.m.	Grading, draining and improving Fairmount Road.	Charles Clark, Town Clerk.
New Jersey.....	Westfield.....	Oct. 16, 8 p.m.	Furnishing and laying 1,200 lin. ft. bluestone flagging.	J. W. Dappert, Civil Engineer.
Illinois.....	Taylorville.....	Oct. 16, 2 p.m.	Constructing 2,150 yds. tarvia roadway.	A. P. Erickson, County Auditor.
Minnesota.....	Minneapolis.....	Oct. 16, 11 a.m.	Grading and graveling road No. 50 (contract No. 33).	P. R. Stinson, Secy. Bd. Pub. Wks.
Missouri.....	Kansas City.....	Oct. 17.....	Constr. cement curbing and sidewalks and paving with asphalt.	County Commissioners.
Ohio.....	Lisbon.....	Oct. 17, 10 a.m.	Paving 1.06 miles road with brick, cost \$13,370.	W. V. Aikman, Secy. Bd. Loc. Imp.
Illinois.....	Berwyn.....	Oct. 17, 8 p.m.	Constructing cement sidewalks on 26th St.	W. E. Vadnais, County Auditor.
North Dakota.....	Crosby.....	Oct. 17, 2 p.m.	Grading streets.	C. J. Sanzenbacher, County Auditor.
Ohio.....	Toledo.....	Oct. 17, 10 a.m.	Grading, draining and macadamizing county road.	H. B. Hayden, Village Clerk.
Ohio.....	Pleasant Ridge.....	Oct. 18, noon.	Improving Carthage Road.	Board Local Improvements.
Illinois.....	Rantoul.....	Oct. 18.....	Constr. brick pavement and concrete curb and gutter 1/2 mi. long.	Board Public Works.
Indiana.....	Fort Wayne.....	Oct. 19, 7:30 p.m.	Paving 2 alleys.	State Hwy. Commissioner.
Ohio.....	Fremont.....	Oct. 19.....	Grad. and macadam. 1.66 miles road, cost \$16,059.	O. C. Bastian, Chm. Bd. Pub. Wks.
Indiana.....	South Bend.....	Oct. 20, 10 a.m.	Constr. grade, curb and walk on O'Brien Street.	C. H. Brown, County Auditor.
Indiana.....	Fort Wayne.....	Oct. 21, 10 a.m.	Building approaches or grade to several bridges.	Chas. Skalla, County Clerk.
Nebraska.....	McCook.....	Oct. 24, 2 p.m.	Grading on the through county road.	Mayor.
Arkansas.....	Little Rock.....	Oct. 24, noon.	Constructing 29 blocks asphalt pavement.	John F. Goldenbogen, Clerk.
Ohio.....	Cleveland.....	Oct. 25, 11 a.m.	Grading, draining and improving South Woodland Road No. 2.	Fred Dreihls, Clk. Bd. Co. Comrs.
Ohio.....	Cincinnati.....	Oct. 27, noon.	Improving Montauk Road.	F. T. Dessery, City Engineer.
California.....	Covina.....	Nov. 1.....	Constr. oil macadam roadway with concrete curb and gutter.	Board Commissioners.
West Virginia.....	Huntington.....	Nov. 1, 1 p.m.	Paving with vitrified brick several streets and avenues.	
Ohio.....	Cleveland Hghts.....	Nov. 7, noon.	Improving Highland Road by paving with brick asphalt or macadam, grading, draining, etc.	H. H. Canfield, Village Clerk.
Florida.....	Pensacola.....	Nov. 7.....	Constructing 14 miles pavement.	Board Trustees.
Brazil.....	Rio Grande.....	Nov. 12.....	Constructing paving, drainage system and water works.	Mayor.
Texas.....	Sanderson.....	Nov. 13, noon.	Constructing 1,840 ft. concrete curb or wall.	County Commissioners.
Illinois.....	Monmouth.....	Nov. 15.....	Paving with brick on a gravel base, with concrete gutter on 2 sts.	City Council.
Pennsylvania.....	Glassport.....	Dec. 9, 8 p.m.	Grading, paving and curbing Arch Street.	M. E. Randell, Boro. Clerk.
Indiana.....	Laporte.....	Jan. 11, 1912.	Constr. asphalt concrete pavement on Pine Lake Ave.	W. Krueger, Clerk.
SEWERAGE				
Ohio.....	Minster.....	Oct. 13, noon.	Constructing sewer on Fourth Street.	J. H. Laufersweiler, Village Clerk.
Nebraska.....	Fullerton.....	Oct. 13.....	Constructing sewer system, cost \$9,000.	Mayor.
Oklahoma.....	Tulsa.....	Oct. 13, 5 p.m.	Constructing sanitary lateral sewers in Dist. No. 19.	T. C. Hughes, City Engineer.
Iowa.....	Centerville.....	Oct. 14.....	Constr. 16 1/2 miles sanitary sewers; 2 Imhoff disp. plants.	Mayor.
Alabama.....	Birmingham.....	Oct. 15.....	Constr. 8 to 15-in. sewers, cost \$20,000.	M. Nicholson, City Supervisor.
Illinois.....	Geneva.....	Oct. 15.....	Constructing sewer system.	A. L. Stemple, City Clerk.
Minnesota.....	Brainerd.....	Oct. 16.....	Constructing lateral sewer in sewer district No. 1.	V. N. V. Roderick, City Clerk.
Indiana.....	Jasper.....	Oct. 16, 7:30 p.m.	Constructing sanitary sewers system.	N. N. Lange, Town Clerk.
Illinois.....	Chicago.....	Oct. 16, 11 a.m.	Constr. sewer with catch basins and manholes.	E. J. Glackin, Secy. Bd. Loc. Imp.
Missouri.....	Kansas City.....	Oct. 17.....	Constructing sewers.	P. R. Stinson, Secy. Bd. Pub. Wks.
California.....	Chico.....	Oct. 17.....	Renting city sewer farm for 3 years.	Mayor.
California.....	Lake Forest.....	Oct. 18, 6 p.m.	Furn. 7,050 lin. ft. tile and 18 catch basins.	J. F. King, City Clerk.
Idaho.....	Payette.....	Oct. 20.....	Constr. 16,700 ft. of 6 to 15-in. vitrified sewer pipe.	Committee on Sewers.
Indiana.....	Evansville.....	Oct. 21, 10 a.m.	Constr. 2 sewers, 12 to 24-in. pipe.	S. A. Bartholome, Clk. Bd. P. W.
Minnesota.....	Wheaton.....	Oct. 21, 10 a.m.	Constructing judicial ditch No. 4.	J. T. Erickson, County Auditor.
Tennessee.....	Jellico.....	Nov. 1, 2 p.m.	Constr. 5.7 miles of 8 to 15-in. pipe sewer.	W. G. Kirkpatrick, Jackson, Miss.
Iowa.....	Burlington.....	Nov. 20.....	Constr. 770 ft. 9-in. pipe sewer and 500 ft. 8-in. also 4 manholes.	A. B. Mahan, Secy. Jellico, Tenn.
Illinois.....	Edwardsville.....	Mar. 1.....	Constr. about 3,000 ft. of 8 to 18-in. pipe sewers.	City Clerk. C. L. Pitchford.
WATER SUPPLY				
Ohio.....	Columbus.....	Oct. 13, noon.	Furnishing and delivering cast iron pipe.	H. S. Holton, Dir. Pub. Service.
Pennsylvania.....	Wampum.....	Oct. 15, noon.	Constructing water works.	Chas. Repman, City Clerk.
Texas.....	Temple.....	Oct. 15, 4 p.m.	Furnishing a horizontal duplex, triple expansion condensing pumping engine, cap. 3,000,000 gals. in 24 hours.	Pat Bracken, Supt. Bd. Water Comrs.
Illinois.....	Cornell.....	Oct. 16, 7:30 p.m.	Constructing water works plant.	J. I. McVay, Chm. Water Com.
Wisconsin.....	Sheboygan.....	Oct. 16, 3 p.m.	Furnishing an 8 million gal. pumping engine.	Theo. Dieckmann, Pres. Bd. Wt. Cm.
Michigan.....	Muskogon.....	Oct. 16, 8 p.m.	Constructing 48" steel or cast iron intake pipe.	Benj. H. Tellman, City Recorder.
Washington.....	Sunnyside.....	Oct. 16, 4 p.m.	Constr. 3 concrete drops and excavating 8,000 cu. yds. near Sunnyside.	U. S. Reclam.-Serv., Sunnyside, W'n
Michigan.....	Baraga.....	Oct. 16, 2 p.m.	Improving water works and lighting plant, including reservoir, wells, bldgs. power plant, generators, switch board, etc.	James McMahan, Village Clerk.
South Dakota.....	Vermilion.....	Oct. 16, 8 p.m.	Constr. city pumping plant.	J. C. Vaughn, City Auditor.
Michigan.....	Baraga.....	Oct. 16, 2 p.m.	Improving water works.	Jas. McMahan, Village Clerk.
North Carolina.....	Charlotte.....	Oct. 17, 3 p.m.	Laying 9 miles 24-in. c. i. pipe, furnishing valves, motors, pumps, etc.	A. H. Wearn, Clk. Water Board.
Nebraska.....	Decatur.....	Oct. 17, 6 p.m.	Constructing water works system, cost \$15,000.	Mayor.
California.....	San Francisco.....	Oct. 18, 11 a.m.	Constructing water system at Camp Yosemite.	F. Van Schrader, Chm. Q.M., U.S.A.
Mississippi.....	Lexington.....	Oct. 18.....	Constr. water works including artesian wells, reservoir pumping station and 6 miles of main.	Mayor and Board Aldermen, W. G. Kirkpatrick, Engineer, Jackson, Miss.
California.....	Exeter.....	Oct. 18.....	Constructing municipal water works system consisting of 100,000 gal. steel tank and tower, motor-driven centrifugal pumps, and 6 miles of mains, cost, \$40,000.	Sloan and Robson, Engs., San Francisco, Cal.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO.
WATER SUPPLY (Continued)				
Mississippi	Lexington	Oct. 18	Constructing 2 flowing artesian wells, reservoir, steel tank and tower, steam or gasoline pumps, boilers and about 6 miles of 6 to 10-in. c.i. mains with hydrants and valves.	Mayor. C. H. Dickinson, Pres. Commission. P. T. Rowe, City Clerk. Trail Creek Water Co. H. H. Canfield, Village Clerk.
Minnesota	Grand Rapids	Oct. 20, 8 p.m.	Constructing water tower and tank.	
Nebraska	Loup City	Oct. 23, noon	Digging and filling ditch for water main.	
Missouri	Wisdom	Oct. 31, 8 p.m.	Constructing framework for flume.	
Ohio	Cleveland Hghts.	Oct. 31, noon	Constr. 6-in. water main in Edendale Street.	
Tennessee	Jellico	Nov. 1, 2 p.m.	Constr. 12½ miles 3 to 10-in. mains, 500,000 gal. reinforced concrete reservoir.	A. B. Mahan, Secy. Commissioners. W. G. Kirkpatrick, Eg., Jackson, M.
India	Howrah	Dec. 1, 4 p.m.	Furn. 2 triple expansion engines coupled to centrifugal pumps, capacity 8,000 gals. per minute.	C. F. Payne, Chm. Municipal Comrs. G. E. Johnston, Secy. Board, Albert St., Brisbane, Queensland.
Australia	Queens'd, Brisb.	Jan. 30, noon	Furnishing a 6 million gallon pumping plant of 2 or 3 units.	
BRIDGES				
Ohio	Cincinnati	Oct. 13	Constructing bridges over Bull Run, Forfeit Run and Eagle Creek on Harrison Pike.	Fred Dreihls, Clerk. Vincenz Boner, Commissioner.
Illinois	Kankakee	Oct. 14, 1:30 p.m.	Constructing 11 bridges.	
California	San Diego	Oct. 16	Constructing reinforced concrete and steel bridge retaining wall and cement curbs.	Percival E. Woods, Supt. Dept. Ways and Means. H. J. Leland, County Clerk. Board Supervisors. J. H. Nash, Clk. Bd. Supervs.
California	Los Angeles	Oct. 16, 2 p.m.	Constructing concrete culverts.	
California	San Jose	Oct. 16, 11 a.m.	Constructing 2 bridges.	P. St. J. Wilson, State Hwy. Comr. H. A. Pfister, County Clerk.
California	Redwood City	Oct. 16, 10 a.m.	Constructing concrete bridge and culvert.	E. E. Shepherd, County Auditor. J. H. Rathfon, City Compt. Bridge Comrs, Idaho Falls, Idaho. A. M. Paxton, City Clerk.
Virginia	Princess Anne	Oct. 16, noon	Constructing wooden drawbridge over North River 242 ft. long and a wooden bridge 366 ft. long over Long Creek.	
California	San Jose	Oct. 16, 11 a.m.	Constr. reinforced concrete bridge.	
Ohio	St. Clairsville	Oct. 17, 1 p.m.	Constructing 1 concrete and 1 stone bridge.	
Pennsylvania	Lancaster	Oct. 17, noon	Constructing 3-span plate girder bridge.	
Idaho	Blowout	Oct. 21, 10 a.m.	Constructing state line bridge.	
Mississippi	Vicksburg	Oct. 21	Constructing bridge, cost \$12,000.	
Ohio	Toledo	Oct. 24	Constructing substructure and superstructure of a bump or automatic swing bridge on county road.	Chas. J. Sanzenbacher, County Aud.
New York	Albany	Oct. 24, noon	Constr. portion of bridge crossing Hudson River at Schuylerville, Contract 88.	C. E. Treman, Supt. Pub. Wks. Fred Dreihls, Clerk. Dan C. Smith, Jr., City Compt.
Ohio	Cincinnati	Oct. 27, noon	Building bridges and culverts on Wooster Pike.	
Texas	Houston	Nov. 20, noon	Constr. 2 reinforced concrete bridges over White Oak Bayou.	
LIGHTING AND POWER				
Ohio	Cleveland	Oct. 16, noon	Furn. transformers for Municipal Elec. Light Plant.	A. B. Lea, Dir. Pub. Service.
South Carolina	Charleston	Oct. 18, noon	Lighting streets for term of 1, 2 or 4 years; electricity gas or other means.	I'on Simons, City Electrician. Purchasing Agent, Mullen. E. F. Scattergood, Chief Engineer. J. K. Taylor, Superv. Arch.
Massachusetts	Boston	Oct. 18, noon	Furnishing 11,000 gas mantle lamps.	
California	Los Angeles	Oct. 20	Equip. San Francisco Power house, capacity 30,000 h.p.	L. K. Rourke, Comr. Pub. Wks. J. K. Taylor, Sup. Arch., Wash- ington, D. C.
Dist. of Col.	Washington	Oct. 21	Installing lighting fixtures in public bldgs. in several cities.	Wm. Coughlin, Mayor. B. of I. A., War Dept., Wash., D.C.
Massachusetts	Boston	Oct. 24, noon	Furnishing and erecting gas post extensions and installing inverted gas lamps on certain streets.	
Kentucky	London	Oct. 25, 3 p.m.	Supplying gas engine and electric generator.	Geo. Johnston, Albert St., S.&W.Bd
Illinois	Champaign	Nov. 4	Lighting streets with gas or electricity.	
Dist. Columbia	Washington	Dec. 18	Gas franchise for city of Manila for 50 years.	
Australia	Brisbane	Jan. 30, noon	Designs, supply and erection at Mount Crosby Pumping Station of alternatively one, two and three complete units consisting of power generating pumps and plants, etc.	
MISCELLANEOUS				
Ohio	Marion	Oct. 15, noon	Furn. 1 motor fire engine, 1 motor chemical and hose wagon and 1 motor chief's car.	Jos. A. Knapp, Dir. Pub. Safety.
New Jersey	Irvington	Oct. 16, 8 p.m.	Furnishing auto combination patrol and ambulance also removing fire alarm system to new Headquarters.	N. L. Lacombe, Chm. Police Com. Isadore Wachsmann, Sec'y Bd. Cont. D. P. McIntyre, City Clerk. Execu. Dept., State House, Trenton. J. R. Slattery, Capt. Engrs. A. B. Lea, Dir. Pub. Service.
New York	Albany	Oct. 16, 3 p.m.	Furnishing 160 police caps.	
Minnesota	Eveleth	Oct. 17	Erecting a two-story brick fire hall.	Capt. F. W. Van Dwyne, Q.M., U.S.A. U. S. Military Prison, Ft. L'worth.
New Jersey	Trenton	Oct. 17, noon	Constructing concrete retaining wall along Delaware river.	Jos. Butts, Secy. Bd. Cont. and Sup.
Florida	Jacksonville	Oct. 20, noon	Removing wreck of Steamer Zeeburg from St. Johns River.	Board Public Works.
Ohio	Cleveland	Oct. 24, noon	Furnishing pumps for fire service pumping station.	J. B. McManus, City Clerk.
Kansas	Ft. Leavenworth	Oct. 25	Furnishing 950 ft. lead sheet cable, 750,000 c.m., 2 circuit breakers, 12 wrought cop. terminals and record. water meters	
Connecticut	Hartford	Oct. 30, 11 a.m.	Furnishing crushed stone to the street department for period of five years from Jan. 1, 1912.	
California	San Francisco	Nov. 1, 3 p.m.	Furnishing and delivering 43 double and pay-as-you-enter type, closed steel motor cars complete: 4 extra trucks complete with axles, wheels and motors.	
New Mexico	Albuquerque	Nov. 6, 8 p.m.	Furnishing triple combination automobile chemical fire engine and hose wagon.	

STREET IMPROVEMENTS

Decatur, Ala.—City Council has passed ordinance to pave Lee st.

Marion, Ala.—Voters have authorized \$11,000 road bond issue.

Los Angeles, Cal.—Council is considering construction of parkway over 3 miles long to connect Elysian and Griffith Parks.

Pomona, Cal.—Resolutions have been passed ordering street work as follows: On Park ave. from 2d st. to Orange Grove ave. On Park ave. from Orange Grove ave. to Garey ave. Paving on East Holt ave. from Reservoir st. to city limits.

San Dimas, Cal.—Property owners have signed agreement providing for macadamizing and curbing of San Dimas ave. from Gladstone ave. to Bonita ave.

Waterbury, Conn.—Board of Public Works has asked Board of Finance for appropriation of \$1,000 more for sidewalks and \$500 for sidewalk repairs.

Jacksonville, Fla.—Resolution has been adopted instructing County Engineer to advertise for bids for paving St. Johns ave. and Lake Shore Drive with asphalt macadam.

Pensacola, Fla.—Bids for street paving to be done under last bond issue will shortly be called for.

Quincy, Ill.—Board of local improvements have decided in favor of creosote wood paving blocks for business district.

Evansville, Ind.—Board of Public Works has planned to improve northern part of city: 2d and E. Iowa aves., Louisiana and Tennessee sts. will be paved with brick and asphalt.

Ft. Wayne, Ind.—Issuance of \$150,000 of bonds is recommended for improvement of various sections of city.

Indianapolis, Ind.—Petition is being considered asking for widening of 38th st., from Capitol ave. to State fair ground, to 100 ft.

Snow Hill, Ind.—Commissioners of Worcester County have decided to build road to correspond with Du Pont boulv. in Delaware, to extend from Snow Hill and connect with Du Pont rd. at Selbyville.

Mishawaka, Ind.—Paving of various streets is under consideration.

Lexington, Ky.—Ordinance has been recommended ordering improvement of north side of Water st.

Lexington, Ky.—Ordinance has been passed ordering construction of concrete sidewalks, curbing and guttering on Rose and Mill sts.

Louisville, Ky.—Board of Public Works will reconstruct south side of Broadway,

from Campbell to 1st sts., and 4th st., from Jefferson to Walnut sts.

Lake Charles, La.—Bids are being asked for construction of about 18,000 lin. ft. sidewalk and curb.—T. H. Mandell, City Engineer.

Marblehead, Mass.—Extensive road improvements have been planned.

Detroit, Mich.—Council has authorized paving of La Belle ave.

Duluth, Minn.—Grading of 22d ave. west is being considered; estimated cost, \$2,500.

Carthage, Mo.—City Council has passed ordinance providing for paving of principal streets in business center of town.

Omaha, Neb.—City Council is considering opening of 22d st. from Farnam to Dodge.

Irvington, N. J.—Resolutions have been passed providing for improvement of various streets.

Jersey City, N. J.—Bids will be received for macadam pavement, 8 in. deep, between Hackensack and Passaic River bridges.

Plainfield, N. J.—Ordinances have been passed providing for extensive street improvements.

Trenton, N. J.—Ordinance has been passed authorizing paving of Highland ave.

Albany, N. Y.—Ordinances have been passed providing for paving of Cuyler ave.

from Delaware ave. to westerly city line, and various street improvements.

Corinth, N. Y.—Village Board of Trustees have sold \$44,000 in bonds to O'Connor & Kahlar & Douglass-Fenwick Co.; amount received will be used for macadamizing various streets, approximately five miles.

Geneseo, N. Y.—Voters have authorized expenditure of \$16,000 for street improvements.

Niagara Falls, N. Y.—Bids will be received for paving of Lincoln place, Quay st. and resurfacing of 3d st. from N. Y. Central tracks to Falls st.

Watertown, N. Y.—Board of Public Works has been granted \$1,000 for highway fund, \$15,000 for making improvements in Water st. and \$300 for improving upper Washington st.

Yonkers, N. Y.—Resolutions have been passed providing for various street improvements.

Yonkers, N. Y.—Bids will be advertised for repaving of Wells ave. from River st. to Warburton ave.; regulating of Springer Place; curbing and guttering of Glover ave.; curbing and guttering of Alexander ave. and for sewer in Bronx River rd.

Scotland Neck, N. C.—County Commissioners have passed order calling election to be held on Nov. 14 to vote on question of issuing \$300,000 county bonds for purpose of building roads throughout county.

Cleveland, O.—City Council has authorized issue of \$900,000 bonds for establishment of connection between Clark ave. s. w. and Clark ave. s. e., and of \$500,000 for extension of Edgewater boulevard from W. 45th st. to W. 25th st.

Dayton, O.—Resolutions have been passed providing for various street improvements.

Altoona, Pa.—Ordinances have been passed providing for grading and improving of numerous streets of city.

Chester, Pa.—Ordinance has been passed for curbing and paving of sidewalk on 9th st. from Lloyd st. to Central ave.

Harrisburg, Pa.—Bids have been asked by State Highway Department for construction of third section of road to be erected under Sproul main highway law. It is located in Moreland Township, and is 6,500 ft. long.

New Castle, Pa.—Ordinance has been passed calling election Feb. 6, 1912, for voting on \$500,000 bond issue for public improvements; \$113,000 will be used for street improvements.

Scranton, Pa.—Petition is being considered requesting that asphalt be substituted for Belgian blocks in paving of section of Luzerne st.

Wilkes-Barre, Pa.—Bids will be received until 2 p. m., Oct. 12 in Common Council Chamber, City Hall, for purchase of 5 per cent paving bonds, amounting to \$32,000. Fred H. Gates, City Clerk.

Providence, R. I.—Construction of cross-town street, 80 ft. wide, to cross Westminster, between Mathewson and Empire sts., is being discussed.

Bristol, Tenn.—Resolution has been adopted to urge County Court of Sullivan County to vote to build the connection necessary to connect with Carter County section of Memphis-to-Bristol highway.

Dallas, Tex.—Laying of cement sidewalks on East Side ave. from Haskell to Fitzhugh, and on Fitzhugh, Haskell and Peak south from East Side has been recommended; estimated cost \$1,200.

El Paso, Tex.—City Council is considering recommendation to pave Arizona st. with asphalt macadam.

Goliad, Tex.—Commissioners have signified their willingness to recommend \$50,000 bond issue for each precinct except Goliad, which should be for \$100,000, bonds to be used for good roads and bridge fund.

Harlingen, Tex.—Voters have decided in favor of street improvement and water works bond issue.

Houston, Tex.—Petition is being circulated asking City Commissioners to widen Houston ave.

Wharton, Tex.—Petition is being circulated asking for election for voting on good roads bond issue.

Lynchburg, Va.—Council Committee is considering report to be made to Common Council providing for \$600,000 bond issue for public improvements.

Warrenton, Va.—Council will issue \$75,000 worth of bonds for road improvement.

Spokane, Wash.—Contract of Ilse & Elliott on Spangle rd. has been revoked and it is expected that new bids will be asked for.

Huntington, W. Va.—City is considering construction of boulevard.

Superior, Wis.—Resolution recommending appropriation of \$12,000 for roads and highways has been passed by County Board. State will contribute \$6,020 as its share for maintaining county road system, bringing total to be spent next year in Douglas County for good roads to \$18,020.

CONTRACTS AWARDED

Little Rock, Ark.—For paving 7 blocks of Washington ave., to Texarkana Creosote Plant.

Los Angeles, Cal.—To Tryon & Brain, Merchants Trust Bldg., at \$300,000, for street work in Windsor sq. tract fronting on Wilshire boulv. Improvements will include grading, paving, sidewalks, curbs and gutters.

Sacramento, Cal.—By Board of Supervisors, for asphaltic macadam paving on portion of Magnolia ave., to Clark & Henery Constr. Co., at \$31,000.

Santa Monica, Cal.—For macadam and oil paving on Seventh st. from Nevada ave. to city limits to Fred Stout.

Dover, Del.—By Kent County Levy Court, for construction of Woodland Beach rd. over marsh to beach, to James R. Mott, at \$10,550.

Wilmington, Del.—By Levy Court for building 2 miles of Philadelphia pike, to Horrigan Construction Co., at \$29,757.25.

Wilmington, Del.—For grading and construction of three miles of boulevard, to George F. Snyder, of Philadelphia.

Cedartown, Ga.—By City, for 5,000 lin. ft. of combined curb and gutter, to Reynolds & Richardson, at 43c. per lin. ft.—H. N. Van Devander, C. E.

Chicago, Ill.—By Board of Local Improvements, as follows: Lawrence ave., W. Ravenswood Park, to Western ave., 9,300 sq. yds., brick, \$25,255; to the Ryan Co., 30 N. La Salle St., Lawrence ave., Central Park ave., to Kedzie ave., \$32,681, to Jno. A. McGarry, 189 W. Washington St.; Lawrence ave., Clark st., to C. & N. W. Ry., 5,700 sq. yds., brick, \$15,362, to Jno. A. McGarry; 48th ave., Washington Blvd., to Colorado ave., 15,800 sq. yds., brick, to Jno. A. McGarry, \$41,628.50; 48th ave., Kinzie st., to Chicago ave., 7,630 sq. yds., brick, \$18,391.25, to A. N. Todd, 514 N. Hamlin ave.; 59th st., 10,070 sq. yds. asphalt, \$22,612.70, to the American Asphalt Paving Co., 133 W. Washington st.; Elston ave., 12,670 sq. yds., brick, \$34,227.60, to Smith & Brown Co., 125 N. La Salle st.; Cornelia st., 2,035 sq. yds., asphalt, \$4,841, to the American Asphalt Paving Co.; 63d st., 8,530 sq. yds., brick, \$21,551, to the Ryan Co.; Southport ave., 12,300 sq. yds. asphalt, \$28,101, to the American Asphalt Paving Co.; alley, Gresham st., etc., 900 sq. yds., brick, \$2,352, to Jas. A. Sackley Co., 133 W. Washington st.; alley, Monroe st., etc., 1,300 sq. yds., brick, \$3,107, to Central Paving Co., 179 W. Washington st.; alley, Maxwell st., 600 sq. yds., brick, \$1,878, to Central Paving Co.; alley, Halsted st., 600 sq. yds., brick, \$1,716, to Jno. A. McGarry; alley, Deming pl., etc., 980 sq. yds., brick, \$2,869, to P. J. O'Brien, 9 N. La Salle st.

Troy, Ill.—For macadamizing 4,700 sq. yds. on Main st., to Illinois Cement & Constr. Co., at \$1.12½ per sq. yd.

Evansville, Ind.—For extension of Lincoln ave. to Warrick County line, distance of about 2¼ miles, by County Commissioners to Mt. Vernon Construction Company at \$6,990. Other bidders were: A. E. Small, \$7,475; Richard Martin, \$7,290.40 and Parsons & Co., \$7,150.

Evansville, Ind.—By Board of County Commissioners for construction of rock road, to Mt. Vernon Constr. Co., Mt. Vernon, Ind., at \$6,990.

Gary, Ind.—By Board of Public Works for paving of Chicago ave. with brick from 9th ave. to 25th ave., to Cain Constr. Co., at \$134,014.

Indianapolis, Ind.—For resurfacing with asphalt Capitol ave., from Washington to Ohio sts., to Hoosier Construction Co., at \$2.44 per lin. ft., and \$300 for street intersections.

Martinsville, Ind.—By city for paving with brick, Morgan, st. to Cunningham & Gageby, of Luiton, Ind., at \$43,674.

New Castle, Ind.—By City Council for paving South 15th st. with Danville paving block, to James Garry, at \$1.49 per sq. yd.

Princeton, Ind.—By City, for two blocks of curbing and guttering on N. Hart st., to L. S. Kell, at \$1,047.03, and for paving of same, to Francis Hawkins, at \$3,587.50.

Cedar Rapids, Ia.—By City Council for paving of three blocks in West Highlands addition to Concrete Constr. Co., at \$2,486, and construction of cement sidewalks, at \$4,981.

Manchester, Ia.—To M. Ford, of Cedar Rapids, for 9,500 yds. of concrete paving, at \$1.16 per sq. yd.

Leavenworth, Kan.—For street improvement as follows: For paving Pottawatomie st., from 5th st. to Bway., to McGuire & Stanton, at \$9,079; for curbing Vine st., from 4th to 2d ave., and 5th st., from Arch to Vine st., to Fred Tarry & Son, at 30 2-5c. per lin. ft.; for constructing granitoid sidewalks on 5th st., to W. F. Edgell, at 11½c. per sq. ft. for concrete and 4c. per sq. ft. for reinforcement.

Lexington, Ky.—For macadamizing road leading from Harrodsburg pike to Picadone School, to Lutes & Co.

Boston, Mass.—To McGuire & Kiernan, for paving Tremont st., for \$23,847.

Fitchburg, Mass.—By Board of Street Commissioners, for constructing 5th st. viaduct, from plans of Jas. H. Fuertes, 140 Nassau st., New York, N. Y., to McHarg-Barton Co., 165 Bway., New York, N. Y.; probable cost, \$90,000.

Allegan, Mich.—For about 7,597 sq. yds. paving, 3,307 lin. ft. combined curb and gutter, etc., to Carpenter & Anderson, of Grand Rapids, for \$14,443.

St. Joseph, Mo.—By Board of Public Works for paving alley between 17th and 18th and Belle and Commercial sts. with Hassam, to Rackliff & Gibson Constr. Co., at \$1.35 per sq. yd.

Whitefish, Mont.—By City Council for building half mile of cement sidewalk in business district to W. A. Powers, of Kalspell, for \$6,891.

Lincoln, Neb.—By City Council for repaving with brick of district No. 42, Q st. between 11th and 13th sts., and 12th between P and Q sts., to Abel & Roberts, at \$2.08 per sq. yd.

Harrison, N. J.—By Town Council, for paving of Essex st., from 4th to 5th st., with bitulithic, to J. F. Shanley Co., at \$5,009.32.

Schenectady, N. Y.—By Common Council for paving Campbell ave., to Warren Bros. Co., of Boston, at \$42,397.

Yonkers, N. Y.—For regulating and grading Frederic st. from Voss st. to Morsemere Place, to Charlton & Weston, at \$15,890. Other bids as follows: Canepi & Nolan, \$22,900; James Corbali, \$16,149; O'Rourke Co., \$17,781; Frank Cianfaglione, \$18,877; Joseph Cuzzo, \$22,134; Thomas Grady, \$17,000; Nicholas Mangini, \$23,500; Kelly & Hannifan, \$15,948; Anthony Fischer, \$18,869; Fred E. Gross & Son, \$17,937; R. A. DeStrange, \$22,000; also for regulating and grading Marlborough rd., from Vista ave. to south line of Stratford ave. to same company, at \$4,220. Other bids as follows: O'Rourke Co., \$5,270; Joseph L. Cuzzo, \$5,180; Kelly & Hannifan, \$4,488; Fred E. Gross & Son, \$4,486.

Yonkers, N. Y.—For regulating and grading Armstrong ave., from Thomas Place to Mile Square rd., to Fred E. Gross & Son, \$2,300. Other bids as follows: O'Rourke Co., \$2,526; Charlton & Weston, \$2,600; Joseph L. Cuzzo, \$3,576; and for regulating and grading Murray ave., from Mile Square rd. to Midland ave., to Thomas Grady, \$44,500. Other bids as follows: R. E. DeStrange, \$58,500; Anthony Fischer, \$45,934; Fred E. Gross & Son, \$44,543; Kelly & Hannifan, \$45,000; Nicholas Mangini, \$47,976; Joseph L. Cuzzo, \$48,687; O'Rourke Co., \$14,967; Canepi & Nolan, \$52,200; Frank Cianfaglione, \$48,778.

Yonkers, N. Y.—For regulating and grading Fairview ave. from Albemarle Place to Mile Square rd., to Charlton & Weston, at \$6,495. Other bids as follows: Fred E. Gross & Son, \$8,225; Kelly & Hannifan, \$7,195; Joseph L. Cuzzo, \$7,345; O'Rourke Co., \$8,988.

Yonkers, N. Y.—For regulation and grading of Palmetto st. from Glen rd. to Hunts Bridge rd., to Charlton & Weston, at \$6,490. Other bids as follows: Nicholas Mangini, \$8,250; Fred E. Gross & Son, \$8,470; Joseph L. Cuzzo, \$8,764; William J. Watson Co., \$7,757; O'Rourke Co., \$10,188; Canepi & Nolan, \$9,400; Frank Cianfaglione, \$7,100; also to same firm for regulating and grading New ave., from Scott ave. to Wakefield ave., at \$17,478. Other bids: Fred E. Gross & Son, \$18,726; R. E. DeStrange, \$33,500; Nicholas Mangini, \$25,000; Joseph L. Cuzzo, \$18,436; William J. Watson Co., \$21,345; O'Rourke Co., \$23,978; Canepi & Nolan, \$18,150; Frank Cianfaglione, \$17,773.

Burlington, N. C.—For street improvement, to Abbe Bros. & Hart, Hickory, N. C., at following bids: Excavation, 27c. per cu. yd.; macadam pavement, \$1.08 per sq. yd.; concrete sidewalk, 90c. per sq. yd.

Green Bay, Wis.—By City Council for paving North Broadway and Main sts., to McGrath Constr. Co., at \$4,259 and \$8,029.

Medina, O.—For grading and macadamizing one mile of road in Medina and Brunswick Counties, to Kennedy & Warner Co., at \$9,100.

Mt. Gilead, O.—By County Commissioners for repair of Cardington pike No. 1, to Upcapher & Shaw, at \$1,545, and Garverick pike, to J. W. Gaverick, at \$1,074.

Salladsburg, Pa.—By State Highway Department, for construction of 5,048 ft. of road, to Juniata Paving Co., of Philadelphia, at \$13,225.40.

Sioux Falls, S. D.—By City Commissioners, for construction of cement concrete sidewalk on 12th st., from Lake ave. to West ave., to J. M. O'Neill, 10c. per sq. ft.; 25c. per cu. yd. for all cut or fill. Other bids as follows: T. Morrisette, 10c. per sq. ft.; 25c. per cu. yd. for all cut or fill; Christ

Carlson, 10 9-10c. per sq. ft.; 18c. per cu. yd. for all cut or fill; J. A. Ward, 19 9-10c. per sq. ft.

Nashville, Tenn.—To Fisher Concrete Co., for construction of several thousand feet of additional granitoid curbing and sidewalk located as follows: On 3d ave., between Demonbreun and Ash sts., and on 17th ave., between Hawkins and South sts. Price was 11 1/2c. per ft.

Marlin, Tex.—By City Council for paving eight blocks, to Ray McDonald, of Austin.

Norfolk, Va.—For furnishing 470 ft. of granite curbing and 140 tons of No. 1 granite blocks for paving streets in 8th ward, to Linellian, Carroll & Co., of Middleburg, N. C.

Pasco, Wash.—For paving 9 blocks of streets, to Pacific Paving Co., at \$43,737.

Spokane, Wash.—By City Commissioners for grading Lacey st. from 17th to 18th aves. and of 18th, Regal to Lacey st. to Naylor and Nordin at \$2,889.

BIDS RECEIVED

Wheaton, Ill.—For construction 23,104 sq. yds. of bituminous macadam as follows: Marquette Construction Co., 184 W. Washington st., Chicago, Ill., \$34,835; Alex. N. Todd, 179 Washington st., Room 405, Chicago, Ill., \$35,061; Chas. M. Porter Co., 118 N. La Salle st., Chicago, Ill., \$35,661; F. G. Proudfoot, 1614 Unity Bldg., Chicago, Ill., \$35,843; H. G. Goelitz, Oak Park, Ill., \$36,226; Jno. A. McGarry & Co., 1009 Security Bldg., Chicago, Ill., \$37,254. Bids on bituminous macadam, which is to have 8-in. foundation course and 2-in. wearing course, were as follows: Marquette Construction Co., 90c.; Alex. N. Todd, 88c.; Chas. M. Porter Co., 97c.; F. G. Proudfoot, 89c.; H. G. Goelitz, 94c.; Jno. A. McGarry & Co., \$1.03.

Portland, Ore.—For following street work: Magnolia ave., from E. 6th to E. 8th sts., grading and concrete curbs and walks—Beehill Bros., \$1,056; Kelkenny Bros., \$1,213; R. J. Debuhr, \$1,159. E. 34th st., from Holgate to Schiller, grading and concrete curbs and walks—Welton, Kibbe and Cochrane, \$718; Keenan Bros., \$574; J. Norris, \$718; A. F. Peterson, \$863; Beehill Bros., \$574; M. Chilich, \$979; Giebisch & Joplin, \$647; Joplin & Meeks, \$660. 37th ave. S. E., from E. 61st to E. 76th sts., grading and concrete curbs and walks—Giebisch & Joplin, \$4,810; Welton, Kibbe & Cochrane, \$4,421; Joplin & Meeks, \$4,107; Beehill Bros., \$4,102; G. K. Howlett, \$4,379. E. 44th st., from Woodstock to 53d ave. S. E., grading and concrete curbs and walks—Keenan Bros., \$9,938; O'Neil & Co., \$9,971; Welton, Kibbe & Cochrane, \$9,470; Joplin & Meeks, \$9,101; Giebisch & Joplin, \$10,132; Beehill Bros., \$8,902. 56th ave. S. E., from E. 41st to E. 48th sts., grading and concrete curbs and walks—Giebisch & Joplin, \$6,077; O'Neil & Co., \$5,931; Keenan Bros., \$5,871; Welton, Kibbe & Cochrane, \$5,681; Beehill Bros., \$5,392; Joplin & Meeks, \$6,007. E. 67th st., from Powell Valley to Foster Roads, grading and concrete curbs and walks—Giebisch & Joplin, \$7,565; Welton, Kibbe & Cochrane, \$7,027; G. K. Howlett, \$6,956; Beehill Bros., \$6,494. E. 68th st., from Powell Valley rd. to 40th ave. S. E., grading and concrete curbs and walks—Welton, Kibbe & Cochrane, \$2,972; Joplin & Meeks, \$2,738; G. K. Howlett, \$2,985; Giebisch & Joplin, \$3,166; Beehill Bros., \$2,773. E. 67th st., from Thorburn to E. Glisan, grading and concrete curbs and walks—Carter Bros., \$4,328; G. K. Howlett, \$4,307; Beehill Bros., \$4,483; Joplin & Meeks, \$4,440.

SEWERAGE

Pueblo, Colo.—Ordinance has been passed authorizing construction of storm sewer in storm sewer district No. 1.

Waterloo, Ia.—Ordinance providing for new sanitary district is under consideration.

Louisville, Ky.—Construction of sewers in various streets is being planned.

Louisville, Ky.—Charles E. Cannell, of Columbus, O., was lowest bidder, at \$22,135.80, for construction of sewer on M st., from 3d to 7th sts.

Morgan City, La.—Petition is being circulated for purpose of holding election for voting on question of sewer and water works connection; estimated cost, \$80,000.

Lynn, Mass.—Council has authorized laying of sewers in Allen ave. and Fayette Court.

Malden, Mass.—Finance Committee has voted to recommend appropriation of \$6,400, balance of money received from sale of Eastern ave. sewer, for general sewer purposes, the street and water department having more demands for sewers than appropriation on hand will cover.

Duluth, Minn.—Petition will be presented to City Council asking for construction of storm sewer on 6th st., between 21st and 23d aves.; estimated cost, \$3,000.

Tecumseh, Neb.—Election will be held for voting on \$7,000 bond issue for sewerage system.

Plainfield, N. J.—Ordinance has been passed providing for construction of further addition to system of sewerage.

Trenton, N. J.—Ordinance has been passed authorizing construction of drain No. 92 in Gould Run Alley.

Lestershire, N. Y.—It has been decided by Village Board to construct surface water sewer through business section of Main st., beginning at Willow st. and continuing to Arch st.

Niagara Falls, N. Y.—Bids have been received at meeting of Board of Public Works for extension of sewer from Buffalo ave. on State Reservation 40 additional ft. into Niagara River.

Oswego, N. Y.—Plans for proposed sewers on both sides of river, as prepared by T. Clarkley Hatton, have been approved of by Common Council; estimated cost, \$182,000.

Schenectady, N. Y.—Sewer bonds value \$100,000 have been sold to Sutor Bros. & Co.

Youngstown, O.—Resolution has been passed providing for construction of sewers in Court, Adams and Harrison sts.; for grading and extending Steel st., and for grading South Forest ave.

Chester, Pa.—Ordinances have been passed for construction of sewers in Bunting and 10th sts.

New Castle, Pa.—Ordinance has been passed calling election Feb. 6, 1912, for voting on \$500,000 bond issue for public improvements; \$183,000 to be used for construction of sewage disposal plant.

North Wales, Pa.—Citizens are discussing installation of sanitary sewerage.

North Wales, Pa.—Engineer in charge of proposed sewer system estimates entire cost of completed system at \$53,000.

Pottstown, Pa.—City has decided to install sewer system and disposal plant.

Scranton, Pa.—Ordinance is being considered for placing before people question of issuing \$275,000 in bonds for sewers as follows: Relief sewer in 4th sewer district, \$83,400; relief sewer, Linden st., additional to 1900 bond issue, \$40,000; system of sewers in 21st Ward, \$40,000; system of sewers in 22d Ward, \$40,000; system of sewers, section B, 5th sewer district, \$4,500; system of sewers in 1st, 2d and 3d Wards, \$25,600; additional sewers in 6th sewer district, \$26,500; additional sewers in 12th, 19th and 20th Wards, \$15,000.

Kingstree, S. C.—Citizens have voted in favor of \$42,000 bond issue for purpose of establishing complete sewerage and water works system.

Sioux Falls, S. D.—Bonds of \$300,000 have been voted at special election; \$200,000 will be used for sewer purposes.

Nashville, Tenn.—Board of Public Works will shortly open bids for construction of two sewers, one in alley 699, south of Lafayette st., and extending eastward and westward to points in 12th and 14th aves.

Richmond, Va.—Plans for drainage of South Richmond have been adopted by Council Committee, and bids invited on main trunk, through which all sewerage of Washington Ward will drain.

Milwaukee, Wis.—Construction of modern sewer in Mitchell st. is being considered.

CONTRACTS AWARDED

Auburn, Ala.—By Town Council, for furnishing material and constructing 2,750 ft. 8-in. and 4,650 ft. 6-in. sanitary sewers, from plans of G. N. Mitcham, of Auburn, to W. S. Bonner, of Lineville, and J. L. Henderson, of Woodlawn.

Prescott, Ark.—For construction of sewer system, to Hamilton Bros. Construction Co., of Cameron, Tex., at following bid: 28 flush tanks, 6 ft. deep, each \$23; 10 lamp holes, each \$6; 28 siphons to set, each \$6; 15 concrete M. H. bottoms, each 24c.; 77 brick M. H. bottoms, each 18c.; trenching and laying 4-in. pipe, 3 to 7 ft. deep, 8c. to 34c.; 6-in. pipe, 6 to 14 ft. deep, 17c. to 80c.; 8-in. pipe, 6 to 18 ft. deep, 17c. to \$2; 10-in. pipe, 6 to 18 ft. deep, 19c. to \$2.15; 12-in. pipe, 6 to 16 ft. deep, 21c. to \$1.35; 15-in. pipe, 25c. to \$1.35; 2-in. galvanized pipe, 28c., and 3/4-in. galvanized pipe, 18c., and for treating plant, \$4,192; total cost, \$23,880. Other bids as follows: W. F. Plummer, Springfield, Mo., \$26,869; Pouncey Paving Co., Helena, Ark., \$30,350; Kelley & Jones, Opelousas, La., \$28,240; C. S. Jackson, Eldorado, Ark., \$26,939; A. N. Peters, Little Rock, Ark., \$27,278; Deer & Broderick, Oklahoma City, \$28,686; Hoffman & Townsen, Marion, Ill., \$33,626; Municipal Construction Co., Kansas City, Mo., \$27,893; Hoeftken Bros., Belleville, Ill., \$32,232.

Contract for pipe for above sewer system,

to Post Pipe Co., Texarkana; siphons, to Merritt Co., of Camden, N. J., and castings, to Eagle Foundry, of Hope, Ark.

Pomona, Cal.—By City Council, for construction of sewer on North Park ave., from Orange Grove to 2d st., to Lou Fleming, at \$1.35 per lin. ft.

Aurora, Ill.—For sewer construction, to Frank E. Kaminski, Watertown, Wis., at \$20,000.

Joliet, Ill.—To Monahan Bros., by Board of Local Improvements, for construction of Bluff st. sewer, for \$1,054.

Rockford, Ill.—By Board of Local Improvements for construction of several sewers as follows: First Ward sewer, to Mulholland & Kuehn, Kaukauna, Wis., \$29,287; Douglas and Albert aves. sewers, to C. E. Hughes, Rockford, \$1,584; 12th st. and 7th ave., to C. E. Hughes, \$663.

Evansville, Ind.—For construction of sewers in block 58, Lamasco; block 8 Hopkins pl. and block 4, Heidelberg & Elsas enlargement, to John L. Newman Co., by Board of Public Works.

Michigan City, Ind.—By City for construction of sewer in Michigan st. from Tryon st. almost to 10th, to Peter Michael at 67c. per lin. ft. for 12-in. tile, and 57c. for 10-in. tile.

Muncie, Ind.—By Board of Public Works for construction of local sewer in 1st st., to William Torrence, at \$3,938.

Anamosa, Ia.—To E. W. Harrison for building of septic tank for disposal of sewage at county home. Tank will be of concrete, 6 x 6 ft. sq., and 11 ft. in depth. Contract includes installation of several hundred feet of overflow pipe.

Des Moines, Ia.—To J. W. Turner Improvement Co. by City Council for construction of Polk pl. sewer system No. 2064, for \$1.69 per lin. ft.

Keokuk, Ia.—To Cameron & McManus for building of sewer through three blocks of alleyway on south side of city. Contract calls for 8-in. tile, sanitary sewer through the alley in blocks 29, 28 and 39, commencing at the west line of 15th st., and connecting with the storm sewer in 18th st., at following figures: \$1.10 for dirt, \$4 per cu. yd. for stone, \$30 each for inspection pipes, four inlets at 40c. each, 6-in. inlets 60c. and 8-in. sewers 24c.

Logan, Ia.—For constructing sewer system, to C. E. Briggs, at \$20,000.

West Union, Ia.—By City Council for construction of sewer system to Oliver C. Kringle, of Elkader, Ia., for \$3,624. The work includes 7,823 ft. of digging ditches and putting in pipe. Of sewer to be laid 2,455 ft. is to be of 10-in. size, 1,910 ft. of 8-in. and 3,455 ft. of 6-in. Other bidders as follows: Blackhawk Construction Co., \$6,199; Thill-Manning-Whalen Co., \$4,897; Hoar & Parkinson, \$4,277; Mulholland, Kuehn & Co., \$4,171; Dunnegan & Briggs, \$4,029.

Baltimore, Md.—For sewers as follows: Sanitary Contract No. 74, lateral sewers in Dist. 20B, to B. F. Sweeten & Son, 2303 Penna. ave., Baltimore, for \$145,630. Sanitary Contract No. 75, Sect. 4, high level interceptor, to W. H. & C. F. Thompson, Baltimore, \$95,734. Storm-Water Contract No. 13, to Ryan & Reilly, Philadelphia, Pa., at \$173,229. Storm-Water Contract No. 15, to M. J. Beach, Baltimore, Md., \$3,720, and Sanitary Contract No. 76, lateral sewer in alley east of Park Heights ave., between 3d and 5th aves., awarded to W. H. & C. F. Thompson, Baltimore, for \$3,194.

Baltimore, Md.—For Storm Water Contract No. 13, by Board of Awards, as follows: Ryan & Reilly, Philadelphia, \$173,229 (awarded contract); David Peoples, Philadelphia, \$170,209; Wm. McCarthy & Co., Baltimore, \$176,203; David M. Andrew, Baltimore, \$185,084; The J. Connelly Construction Co., Cleveland, \$204,638; Jas. Ferry & Sons, Inc., Pittsburgh, \$204,145; B. F. Sweeten & Son, Baltimore, \$211,374; Whiting-Turner Co., Baltimore, \$213,745.

Duluth, Minn.—By Board of Public Works, for storm sewers in 20th ave., east from 4th st. to Woodland ave.; in Woodland ave., to 5th st.; in 5th st., to 20th ave., east, and in 20th ave. east to 6th st.; 19th ave. east, between 4th and 5th sts., and in 21st ave. east from 4th st. to Woodland ave., to C. R. McLean, at \$6,149.50; storm sewer in Highland ave. from Balsam st. to Linden st., with an outlet in Myrtle st., to C. R. McLean, \$2,506; storm sewer in West 5th st., 100 ft. east of 25th ave. west, and storm sewer in 6th alley, 100 ft. from 25d. ave., to George R. King, \$642; sanitary sewer in Wicklow st., between Michigan and Winnipeg aves., to Charles Eklund & Co., at \$2,635.30; sanitary sewer in 1st st., from 28th ave. east to Parkside ave., to Charles Eklund & Co., at \$1,687.20.

Buffalo, N. Y.—By Commissioner of Public Works, for construction of sewers as follows: To Geo. W. Moore, a 10-in. tile sewer in Main st., between Homeworth and University aves.; to Dark & Co., 12 and

10-in. tile sewers in Toledo st., between Clinton and Cassimer sts.; in Cable st., between Buffalo River and 1,430 ft. south of Clinton st.; 12 and 10-in. tile sewers in Spann st., between Clinton and Cassimer sts.; to John M. Fahning, a 10-in. tile sewer in Sheridan ave., between Northland and East Delavan ayes.

Newburgh, N. Y.—For construction of sewer on Water st. and Broadway, to Michael R. Spino, of Fishkill Landing, at \$2.59 per lin. ft., \$275 per cu. yd. of rock excavating and \$99 for each manhole.

Rochester, N. Y.—By Board of Contract and Supply, for constructing sewer in Charles and Butler sts., to John J. Regan, at \$734.75; in Clinton ave., to H. N. Cowles, at \$2,045.75; in Salisbury st., to Passero & Petrossi, at \$1,622.

Yonkers, N. Y.—For construction of sewer in Ashburton ave., from point 250 ft. north of Yonkers ave. to Walnut st., to Fred E. Gross & Son, at \$7,988. Other bids as follows: O'Rourke Co., \$9,944; Frank Cianfraglione, \$11,950; James Corbali, \$9,036; Charlton & Weston, \$10,285; Joseph L. Cuzzo, \$10,357; Canepi & Nolan, \$10,600; Nicholas Mangini, \$14,000; Thomas Grady, \$11,000; Kelly & Hannifan, \$9,643; R. A. De-Strange, \$9,975; also for sewers in Glen rd. and Glen ave., between Sterling ave. and Bronx River, to O'Rourke Co., \$36,400. Other bids as follows: Fred E. Gross & Son, \$36,418; Nicholas Mangini, \$38,650; Joseph L. Cuzzo, \$38,900; Canepi & Nolan, \$47,000; and for sewer in Belvedere Place, from Hawthorne ave. easterly 309 ft., to Kelly and Hannifan, \$2,193. Other bids: James Corbali, \$2,736; O'Rourke Co., \$2,425; Fred E. Gross & Son, \$2,344; R. A. De-Strange, \$2,600.

Chester Pa.—By City for construction of sewer on 6th st. from Booth st. to Highland ave.; on 3d st. from Booth to Clayton; on 3d st., from Booth to Thurlow, and extension of sewer on Ivy st. to Mary, Pritchard and Oliver, as follows: Booth st., from the Delaware River to 6th st., 36-in. pipe, \$4.49; 30-in., \$3.09; 24-in., \$2.06; 36-in. Y, \$7.80; 30-in. Y, \$5.50; 24-in. Y, \$1.95; manholes, \$35 each; rock, \$4.75; concrete, \$6.50; 18-in. pipe, \$1.48. Sixth st., from Booth st. to Highland ave., 30-in. pipe, \$2.92; 24-in., \$1.93; 18-in., \$1.36; 12-in., \$1.14; 30-in. Y, \$5.30; 24-in., \$1.95; 12-in., \$1.14; manholes, \$35; rock, \$4.75; concrete, \$6.50. Third st., from Booth to Thurlow, 24-in. pipe, \$1.93; 18-in., \$1.36; 12-in., \$1.14; 24-in. Y, \$1.95; 18-in., \$1.10; 12-in., 70c.; manholes, \$35; rock, \$4.75; concrete \$6. Second st., from Booth to Thurlow, 24-in. pipe, \$1.93; 18-in., \$1.36; 12-in., \$1.14; 24-in. Y, \$1.95; 18-in. Y, \$1.10; 12-in., 70c.; manhole, \$35; rock, \$4.75; concrete \$6. Third st., from Booth to Clayton, 24-in. pipe, \$1.93; 18-in., \$1.36; 12-in., \$1.14; 24-in. Y, \$1.95; 18-in. \$1.10; 12-in. Y 70c.; manholes, \$35; rock, \$4.75; concrete, \$6. Central ave. from 2d to 3d sts., 18-in. pipe \$1.43; 18-in. Y branch, \$1.10; manholes, \$35; rock, \$4.75; concrete \$6. Extension to the Ivy st. sewer, 8-in., 92c.; 8-in. Y 50c.; manholes, \$35; rock, \$4.75; concrete \$6.

Chester, Pa.—By City for construction of sewer on Booth st., from Delaware to 6th st. and on Central ave., from 2d to 3d sts., to John Hanna & Sons, as follows: Third st., from Booth to Thurlow, 24-in. sewer, \$1.99; 18-in., \$1.42; 12-in. \$1.17; 24-in. Y, \$1.95; 18-in. Y, \$1.10; 12-in. Y, 65c.; manholes, \$35; concrete, \$6; rock, \$4.25. Booth st. from Delaware River to 6th st., 36-in. sewer, \$4.27; 30-in., \$2.94; 24-in., \$1.95; 18-in. \$1.38; 36-in. Y, \$7.80; 30-in. Y, \$5.50; 24-in. Y, \$1.95; 18-in. Y, \$1.10; manholes, \$35; concrete \$6; rock, \$4.25. Second st., Booth to Thurlow, 24-in. pipe, \$1.99; 18-in., \$1.42; 12-in., \$1.17; 24-in. Y branch, \$1.95; 18-in. Y, \$1.10; 12-in. Y, 65c.; manholes, \$35; concrete, \$6; rock, \$4.25. Third st., from Booth to Clayton, 24-in. pipe, \$1.99; 18-in., \$1.42; 12-in., \$1.17; 24-in. Y, \$1.95; 18-in. Y, \$1.10; 12-in. Y, 65c.; manholes, \$35; concrete, \$6; rock, \$4.25. Extension of the Ivy st. sewer to Mary st., 8-in. pipe, 97c.; 8-in. Y, 50c.; manholes, \$35; rock, \$4.25; concrete, \$6. Central ave., from 2d to 3d sts., 18-in. pipe, \$1.38; 18-in. Y, \$1.10; manholes, \$35; rock, \$4.25; concrete, \$6. Central ave., from 2d to 3d sts., 18-in. pipe, \$1.38; 18-in. Y, \$1.10; manholes, \$35; rock, \$4.25; concrete \$6. Other bids as follows: Chester Contracting Co., 6th st., from Booth st. to Highland ave., 30-in. sewer, \$3.65 per foot; 24-in., \$2.24; 18-in., \$1.69; 12-in., \$1.44; 30-in. Y branch, \$5.50 each; 24-in. Y, \$1.50; 16-in. Y, \$1.50; 12-in. Y, 75c.; manholes, \$40 each; rock, per cu. yd., \$4.75; concrete in place per cu. yd., \$12. Third st., from Booth to Clayton, 24-in. sewer, \$2.24; 18-in. sewer, \$1.69; 24-in. Y branch, \$1.50; 18-in. Y branch, 95c.; manholes, \$40; rock, \$4.75; concrete, \$12. Third st., from Booth to Thurlow, 24-in. sewer, \$2.24; 18-in., \$1.69; 24-in. Y, 95c.; manholes, \$40; rock, \$4.75; concrete, \$12. Second st., from Booth to Thurlow, 24-in. sewer, \$2.24; 18-in., \$1.69; 24-in. Y, \$1.50; 18-in., 95c.; manholes, \$40; rock, \$4.75; concrete, \$12.

Sioux Falls, S. D.—By City Commissioners, for construction of E. 8th st. sewer, to Joe Sampson, at \$2,699. Other bids as follows: Jones & Roderick, construction of sewer, without rock excavation, \$2,832; solid rock excavation, \$18 per cu. yd.; Thos. Naughton, construction of sewer, without rock excavation, \$2,196.68; solid rock excavation, \$13.75 per cu. yd.; Fanebust Construction Co., construction of sewer, without rock excavation, \$2,888; solid rock excavation, \$12 per cu. yd.

Milwaukee, Wis.—By County Board of Supervisors, for construction of sewers on east side of Grand ave. viaduct, to Cornelius J. Crisley & Son, at \$13,201.

Racine, Wis.—By Board of Public Works, for sewer in Case addition, to Andrew Thompson, of Racine, for \$9,563.

WATER SUPPLY

Piedmont, Ala.—Election will be held for voting on bond issue for improving water works and installing light and power plant.

Dorris, Cal.—Construction of municipal water plant has been decided on.

Los Angeles, Cal.—Proposal of Public Service Commission to issue \$5,500,000 in bonds at earliest practicable date for purpose of building distributing system so that city can market its aqueduct power direct to consumer is being considered by Council.

Los Angeles, Cal.—Better water service and larger mains for Cypress Park have been recommended by Fire Commission.

Redlands, Cal.—Election will be held for voting on \$750,000 bond issue for municipal water system.

Washington, D. C.—American Consul in Latin-American country reports that local firm desires prices on following classes of drive pipe: Six-inch, 18 lbs. to the foot; 8-inch, 23 lbs. to the foot; 10-inch, 40 lbs. to the foot; 10-inch, 32 lbs. to the foot, and 12½-inch, 40 lbs. to the foot. No. 7402 Bureau of Manufactures.

Macon, Ga.—Extension of water pipes in East Macon and South Macon will be considered by Water Commissioners.

Macon, Ga.—Installation of two new engine pumps at water works station is being considered.

Zebulon, Ga.—Plans are being prepared for new water works system.

Tremont, Ill.—Sum of \$22,000 will be expended on installation of water works, including water tower and 3 miles of mains.

Columbus, Ind.—City Council has decided to sink test wells in effort to get pure water for city, under supervision of Philip Burgess, Cons. Engr.

Chapman, Kan.—Bond issue of \$25,000 has been voted by city for building municipal water works plant.

Trescott, Kan.—Installing of municipal water plant is being considered.

Morgan City, La.—Petition is being circulated for purpose of holding election for voting on question of water works and sewer connection; estimated cost, \$80,000.

Shreveport, La.—City is considering purchase of water works company's plant.

Crosby, Minn.—Crosby Water, Light & Power Co. has been organized for purpose of building and operating power plant and furnishing village of Crosby with water, light and power.

Webster Grove, Mo.—Election will be held for voting on \$75,000 bond issue for extension of water mains.

Helena, Mont.—Helena banks have purchased \$400,000 issue of water bonds, and city will use funds for taking over plant of Helena Waterworks Company.

Whitefish, Mont.—Petition has been received asking city to extend water mains into Riverside addition.

Tecumseh, Neb.—Election will be held for voting on \$15,000 bond issue for installation of water system.

Elmer, N. J.—Franchise has been granted to Elmer Water Co. for construction and operation of water works for fifty years.

Trenton, N. J.—Proposition of establishing joint water system in Wanaque watersheds for number of North Jersey municipalities will be reported on by Morris R. Sherrard, Consulting Engineer; estimated cost, \$10,000,000.

Fishkill Landing, N. Y.—Citizens have voted in favor of appropriating \$4,000 for extension of water mains.

Newburgh, N. Y.—Water Commissioners have decided to install complete new system of service pipes on Colden and Water sts.

Orangetown, N. Y.—Application has been made by Robert A. Forest, representing Spring Valley Water Works, for permission to lay water pipes along several highways of town.

Oswego, N. Y.—Extension of water mains in Tallman st., between 8th and Hart sts., has been ordered.

Weldon, N. C.—Bond issue of \$40,000 has been voted by city for establishment of water works.

Akron, O.—Ordinance has been passed providing for sale of \$160,000 bonds for purchase of plant of old water works.

Dayton, O.—Appropriation of \$8,000 has been made for water distribution and pipe extension.

Marion, O.—Election will soon be held to vote on issuing \$350,000 bonds for construction of water works.

Navarre, O.—Council has passed resolution authorizing election in November for voting on \$25,000 bond issue for municipal water system.

Springfield, O.—For furnishing pump to city water works to W. C. Dunn, of Dunn-Laidow Co., of Cincinnati.

Toledo, O.—Appropriation of \$6,850 has been made for building retaining wall at filtration plant.

Westville, Okla.—Voters have decided in favor of water bond issue.

Falls City, Ore.—At special city election voters decided to issue bonds to amount of \$5,000 to extend water system, pay indebtedness and build fire emergency reservoir.

Kingstree, S. C.—Citizens have voted in favor of \$42,000 bond issue for purpose of establishing complete water works and sewerage system.

Sioux Falls, S. D.—Bonds of \$300,000 have been voted at special election; \$100,000 will be used for extension of municipal water works system.

Waverly, Tenn.—Voters have authorized issuance of bonds for purchase of water works system and electric light plant from Lucas Land & Lumber Co.

Harlingen, Tex.—Voters have decided in favor of water works and street improvement bond issue.

Polytechnic Heights, Tex.—Bond issue of \$30,000 has been approved of for water works improvement.

Manti, Utah.—City will consider question of installing water meters.

Wellsville City, Utah.—Council is considering installation of water system.

Leavenworth, Wash.—Election will be held Oct. 21 for voting on \$50,000 bond issue for constructing water system.

Lynden, Wash.—Election will be held in October for voting on \$2,000 bond issue for removal of water works pumping plant to river, where small filtration system will be installed.

Grafton, W. Va.—Citizens have voted in favor of \$90,000 bond issue for improving city's water system.

Fond du Lac, Wis.—Citizens have voted in favor of purchasing water works plant; estimated cost, \$345,000.

Manitowoc, Wis.—Total of \$15,000 in water works bonds has been sold.

CONTRACTS AWARDED

Lockport, N. Y.—By Common Council for water pipe in Cottage st. from High to Price, and for drain and water pipe in Passaic ave., from Ontario st. to lot No. 22 on Passaic, to F. J. LeValley, at \$744 and \$1,260.

Newburgh, N. Y.—By Board of Water Commissioners for constructing new gate house and flume at Washington Lake, to Jova & Kehoe, for 10 per cent added to cost of doing the work.

Niagara Falls, N. Y.—By Board of Water Commissioners for supplying lead pipe, \$2,443.50.

Rochester, N. Y.—By Board of Contract, to H. C. Schroeder for \$3,558, for laying new 24-in. water mains in Leighton ave. and along private right of way.

Paris, Tex.—By City Council for boring well 2000 ft. deep at reservoir, to W. E. Tornerlin, at \$7,000.

North Yakima, Wash.—By city for constructing reinforced concrete pipe and auxiliary fire hydrants on 6th ave., to International Contract Co., of Seattle, at \$25,290.

BIDS RECEIVED

Toledo, Ohio.—For construction of filtered water reservoir: (a) Excavating and grading, about 100,000 cu. yds.; (b) concrete work, about 101,000 cu. yds.; (c) gate house; (d) setting valves, sluice gates, etc.; (e) laying c.-i. pipe; (f) totals: M. Robbit & Sons Co., (a) \$77,174, (b) \$135,412, (c) \$3,741, (d) \$100, (e) \$2,627, (f) \$218,785; Breyman & Oneil, (a) \$50,000, (b) \$74,000, (c) \$3,000, (d) \$100, (e) \$900, (f) \$128,000; Ensminger Bros., (a) \$28,000, (b) \$36,740, (c) \$1,000, (d) \$800, (e) \$1,000, (f) \$117,540; Cleary White Construction Co., (a) \$56,876, (b) \$109,171, (c) \$3,000, (d) \$500, (e) \$1,695, (f) \$171,248; H. J. Spieker Co., (a) \$58,608, (b) \$119,034, (c) \$3,000, (d) \$500, (e) \$429, (f) \$179,714; The A. Bentley & Sons Co., (a) \$90,000, (b) \$104,000, (c) \$1,550, (d) \$350, (e) \$3,000, (f) \$199,200; The J. Connelly Construction Co., (a) \$42,680, (b) \$37,000, (c) \$1,500, (d) \$750, (e) \$1,500, (f) \$143,430; The Beers-Offut Construction Co., (a) \$33,000, (b) \$79,000, (c) \$1,250, (d) \$250, (e) \$900, (f) \$114,400.

LIGHTING AND POWER

Paragould, Ark.—Improvements to cost \$30,000 will be made to municipal electric light plant.

Dorris, Cal.—The Siskiyou Electric Light & Power Co. will furnish town with light and power service.

Los Angeles, Cal.—Bids will be received Oct. 23 by Council for first installment of power and harbor bonds.

Oakland, Cal.—City Council is considering municipal ownership of underground conduits connecting electroliers, and purchase of current from competing bidders.

Montrose, Cal.—Proposition is being considered by City Council requesting that franchise of Montrose Electric Light & Power Co. be extended for 20 years and company will spend \$100,000 in enlarging present plant.

Dover, Del.—Council's Light and Water Committee has been empowered to purchase larger engine for municipal water and light plant.

Washington, D. C.—Communication has been received from American business house stating that firm in India is in the market for following supplies: A traction engine with sufficient power to drag 30 to 40 tons at a time on level roads (double cylinder locomotive is preferred), burner to be fuel burner; nine trucks of 10 tons capacity each; one 10-ton steam road roller; diagram of pumping plant for wells, using gasoline and kerosene engines of different powers. No. 7435, Bureau of Manufactures.

Macon, Ga.—Light Committee of City Council will shortly report favorably on proposition to have city defray cost of maintaining extensive "white way system." Committee will agree to pay for cost of lighting poles if merchants will agree to pay expense of erecting system.

Elwood, Ind.—City Council has agreed to furnish current for 85 street lamps to be installed on Main st.

Princeton, Ind.—City Council is considering petition asking for investigation of Consumers Gas Co.'s franchise; committee of three councilmen has been appointed.

Columbus Junction, Ia.—Installation of electric plant is being considered.

Deep River, Ia.—Installation of municipal electric light plant is under consideration.

Iowa Falls, Ia.—At special election O. F. Peterson, of Des Moines, was granted 25-year franchise for electric light and heating plant.

Mansfield, La.—Franchise has been granted W. D. McCormack for laying natural gas distributing system.

New Bedford, Mass.—City Council Committee on Street Lights has asked manufacturers of iron street poles to submit bids on four poles to support flaming arcs around library building.

Crosby, Minn.—Crosby Water, Light & Power Co. has been organized for purpose of building and operating power plant and furnishing village of Crosby with light, power and water.

Elizabeth, N. J.—City Council has authorized placing of arc lights in Broad st.

Jersey City, N. J.—City is considering better lighting system for shopping district.

Paterson, N. J.—Improvement of lighting system in Market st. is being discussed.

Cohoes, N. Y.—Petition has been received asking that electric lights be installed on Vliet st. extension from Baker ave.

Little Falls, N. Y.—Mass meeting will be called for discussing advisability of building municipal electric lighting plant.

Poughkeepsie, N. Y.—Common Council has authorized installation of cluster lights on Market and Washington sts.

Salamanca, N. Y.—At citizens' mass meeting it was recommended that additional 135-h.p. engine be purchased for municipal light plant.

Portland, Ore.—Ordinance has been introduced in Council authorizing Executive Board to advertise for bids for lighting streets in districts now in darkness.

Altoona, Pa.—Ordinance has been introduced in Select Council granting People's Natural Gas Co. the right to lay pipes and mains in city streets for supplying natural or manufactured gas to residents of city at 35c. per 1,000 ft.

New Castle, Pa.—Ordinance has been passed calling election Feb. 6, 1912, for voting on \$500,000 bond issue for public improvements; \$200,000 of this will be used for erection of municipal lighting plant.

Waverly, Tenn.—Voters have authorized issuance of bonds for purchase of electric light plant and water works system from Lucas Land & Lumber Co.

Chatham, Va.—Town Council has voted to advertise for bids on franchise to illuminate town with electricity.

Richmond, Va.—Council Committee has approved of system of distributing gas mains in Washington Ward over Mayo

Bridge. Bids are required for furnishing and laying 10,080 ft. of 16-in. mains, estimated cost \$25,200; 25,680 ft. of 6-in. mains, estimated cost \$17,976, and 24,000 ft. of 4-in. mains, estimated cost \$12,000, making total of \$55,176.

CONTRACTS AWARDED

Fort Miley, Cal.—To McFell Electric Co., 201 Sansome st., San Francisco, for installing electric light system, including pole lines, 1,000 lighting fixtures, street lamps, transformers, switchboards, etc., at \$17,210.

Michigan City, Ind.—By Board of Trustees of the Indiana State Prison, to Ft. Wayne Electric Works, of Ft. Wayne, for power plant and pumping plant consisting of two 150-kw. generators, direct connected to engines, with switchboard and Platt centrifugal pumps 820 gal. each with motors, for \$11,500.

Des Moines, Ia.—To McDonnell Iron Works, for ornamental lamp standards for cluster lamps on W. 7th st.

Kansas City, Kan.—To J. W. Ferguson Construction Co., at \$23,669, for construction of power station and boiler house for proposed municipal electric light plant. The Alpine Construction Co. was awarded the contract for construction of foundations for both buildings, at \$9,984.

Big Bend, S. D.—To South Dakota Construction Co., Rapid City, for constructing power house for Dakota Power Co., for about \$20,000.

Victoria, B. C.—By Special Council Committee, to Hutchinson Bros., at \$5,827, for installation of cluster lamps on Fort st.

FIRE EQUIPMENT

Sebastopol, Cal.—City will shortly install up-to-date fire alarm system.

New Castle, Del.—City Council is considering purchase of chemical fire engine.

Wilmington, Del.—Union Fire Co. will erect new building.

Indianapolis, Ind.—Board of Public Safety have decided to ask for appropriation for purpose of purchasing automobiles for assistant fire chiefs.

Muncie, Ind.—City Council will probably approve of plan to equip city fire department with automobile apparatus.

River Park, Ind.—Petition will be presented to Board of Public Safety of South Bend for establishment of modern fire station.

South Bend, Ind.—Bids will shortly be asked for motor chemical engine to be added to fire department.

Shreveport, La.—Election will be held Oct. 17 for voting on \$50,000 bond issue for two additional fire stations and necessary equipment.

Springfield, Mass.—Bonds value of \$68,000 have been issued for erection of fire station on North st.

Grand Rapids, Mich.—Motor-driven ladder truck will be purchased for Station No. 1.

North Platte, Neb.—Fire station will be erected and improvements made to fire department.

East Orange, N. J.—Bids will be readvertised for reconstruction of fire-alarm system; estimated cost, \$2,500.

Linden, N. J.—City is considering purchase of new fire apparatus to cost \$3,000.

Maplewood, N. J.—Erection of fire station is being considered.

Pleasantville, N. J.—Erection of fire house has been authorized.

Trenton, N. J.—Establishment of fire house on Stuyvesant ave. is under consideration.

Ventnor City, N. J.—City has voted bonds for fire department improvements.

Binghamton, N. Y.—Purchase of another piece of automobile fire apparatus is under consideration.

Buffalo, N. Y.—Commissioners have been directed to readvertise for bids for fire hose according to specifications of National Board of Fire Underwriters.

Dunkirk, N. Y.—Plans for fire hall to be erected in Eagle st. have been approved of; estimated cost, \$10,000.

Falconer, N. Y.—Installation of fire alarm system to cost \$2,000 is being considered by Council.

Newburgh, N. Y.—Resolution has been passed providing for appropriation of \$2,000 for purchase of new hose for fire department.

Durham, N. C.—Purchase of auto truck and fire engine and erection of fire station has been authorized.

Cincinnati, O.—Bond ordinance for \$255,600 for improvements and additions in fire department will be presented to Council.

Norwalk, O.—Election will be held in No-

vember for voting on \$10,000 bond issue for purchase of auto fire engine.

Falls City, Ore.—Voters have decided at special election to issue bonds to amount of \$5,000 for building fire emergency reservoir and for extending water system.

Franklin, Pa.—Council is considering purchase of combined chemical fire engine and hose wagon for Friendship Co. No. 1.

Lebanon, Pa.—Council is considering plans of Architect Gingrich for new engine house for Perseverance Fire Co.

Columbia, S. C.—Purchase of auto combination truck and chemical engine has been recommended by fire department.

Coleman, Tex.—City Council has authorized purchase of 500 ft. of fire hose.

CONTRACTS AWARDED

Detroit, Mich.—By City Commission, for furnishing city with automobile combination chemical and hose wagon, to American La France Co., at \$5,500.

Bloomfield, N. J.—By Town Council, for combination hose and chemical engine, to James Boyd & Bro., of Philadelphia, at \$1,780.

Binghamton, N. Y.—For supplying two pieces of apparatus, an automobile combination chemical and modern aerial truck, to Seagrave Mfg. Co., at \$5,500 and \$5,700.

Hampton, Va.—By Wythe District Fire Co., for special hose and fire wagon, to H. C. Hudson, of Newport News.

BRIDGES

Pueblo, Col.—County Commissioners have advertised for bids for construction of bridge across Hogan's Hollow; estimated cost, \$3,000.

Chicago, Ill.—Ordinance is being prepared calling for election on Nov. 7 for voting on expenditure of about \$4,655,000 for erection of new bridges.

Pecatonica, Ill.—Construction of bridge across Pecatonica River to cost about \$8,000 is under consideration.

Mt. Vernon, Ind.—County Council is considering appropriation of \$1,500 for bridge repairs.

South Bend, Ind.—Bids will shortly be required for construction of bridge over east race at La Salle ave.; estimated cost, \$15,000.

Des Moines, Ia.—Plans are being prepared for concrete bridge on North ave.

Atlantic City, N. J.—Rebuilding of Albany ave. bridge across thoroughfare will shortly be considered.

Hackensack, N. J.—Board of Freeholders has adopted motion authorizing borrowing of \$11,147 in anticipation of bond issue for Summit ave. bridge.

Jersey City, N. J.—Construction of bridge over Passaic River between Arlington and North Newark is under consideration.

Newark, N. J.—Plans for proposed bridge at Bridge st. over Passaic River have been approved of.

Fulton, N. Y.—City Chamberlain has been authorized to call for bids on \$80,000 worth of bonds for proposed re-enforced concrete bridge to span the Oswego River at Broadway.

Salisbury, N. C.—Construction of steel bridge across South Yadkin River is being considered by Counties of Rowan and Davie.

Portland, Ore.—Appropriation of \$2,000 has been made by Council to defray cost of making soundings and surveys across Willamette for proposed South Portland Bridge. It is proposed to submit bridge project to voters at special election in January. South Portland Bridge supporters will ask that bond issue of \$800,000 to pay cost of building the bridge be authorized.

Portland, Ore.—Bids will shortly be required for construction of superstructure of Broadway bridge.

Portland, Ore.—Council will be asked to call election for voting on \$800,000 bond issue for purpose of building bridge across Willamette at Woodward ave. and Meade st.

Reading, Pa.—County Commissioners have decided to make bonded loan of \$475,000 to pay cost of Penn st. bridge.

Providence, R. I.—Appropriation of \$2,000 will be made for repairs to Whipple's Bridge over Blackstone.

Anderson, S. C.—Anderson County, S. C., and Hart County, Ga., will join in constructing steel bridge across Savannah River, near Brown's ferry, at cost of \$30,000.

CONTRACTS AWARDED

Colfax, Cal.—For reconstruction of Iowa Hill bridge at American River near Colfax, to R. L. Turner.

Dover, Del.—By Kent County Levy Court, for construction of abutment for draw-bridge over St. Jones River, at Lebanon, to George W. Waltheater, of Woodside, at \$1,097.

Lebanon, Del.—By Levy Court, for repairs to drawbridge, to George Walheater, at \$1,097.

Camp Point, Ill.—By town for construction of one reinforced concrete bridge, to C. A. Weaver & Son, of Clayton, Ill.

Marshalltown, Ia.—To N. M. Stark Co., of Des Moines, for constructing reinforced concrete bridge 180 ft. long over Iowa River at Nicholson Ford for \$8,000.

Abington, Mass.—For constructing bridge across Island Grove Pond, to Wilson C. Tomlinson, Boston. Bridge will have steel enclosed piers, with iron palings and concrete flooring 12 ft. wide, 300 ft. long, extending from Wilson pl. to foot of memoria arch on park side. There will be 15 spans of 20 ft. lengths and flooring will be 6 ft. above high water.

Cincinnati, O.—By County Commissioners for construction of culverts, bridges and retaining walls on Clough Creek pike, from Batavia pike to county line, to Peter Praechter, Garrard & Donohue, at \$18,139.

Youngstown, O.—For constructing Dewey ave. bridge, to Wymer-Harris Construction Co., at \$11,000.

Newkirk, Okla.—For constructing steel bridge over Chickasaw River, to Canton Bridge Co., Canton, O., at \$9,995.

Portland, Ore.—For building 140 ft. of steel approach to Dead Flat-Weiser bridge across Snake River, to Coast Bridge Co., Portland, at \$9,750.

MISCELLANEOUS

Oakland, Cal.—Plans have been adopted by City Council for retaining wall to be constructed in connection with work in Key Route basin; estimated cost, \$12,000.

San Diego, Cal.—Ordinance has been passed calling election on Nov. 14 for voting on \$1,000,000 bond issue for harbor improvements.

Calro, Ill.—Ordinance is being considered for calling election for purpose of creating fund for erection of City Hall.

Fort Wayne, Ind.—Ordinance has been passed appropriating \$4,000 for repairing of garbage plants.

Leavenworth, Kan.—Plans of Architect W. P. Feth for court house have been approved of, and bids for construction of same will shortly be required.

Haverhill, Mass.—Park Commission has selected site on Primrose St. as public playground for wards 3 and 6 sections of city.

Detroit, Mich.—Resolution is being considered by Council, authorizing issuance of \$40,000 of bonds for construction of bathhouse.

Duluth, Minn.—Council Committee is discussing improvements to city jail.

Millburn, N. J.—Election will be held in November for voting on erection of new municipal building.

Easthampton, L. I., N. Y.—Citizens are discussing erection of town hall.

Fredonia, N. Y.—Bids have been opened by Village Board for 200-ft. concrete retaining wall on Forest place to keep back overflow from Canadaway Creek.

Akron, O.—Council will erect public comfort station on Main st., near Market; estimated cost, \$7,900.

Akron, O.—Ordinance has been passed authorizing \$4,500 bond issue for purchasing site on which to erect contagious disease hospital.

Cincinnati, O.—Proposition to issue bonds in sum of \$2,500,000 for new county courthouse will be placed on bond ballot at November election.

Cincinnati, O.—Bond ordinance for \$175,125 for improvements and additions in police department will be presented to Council.

Dayton, O.—Council has authorized issuance and sale of bonds in sum of \$5,200 for purpose of taking over and improving White City park.

Newport, O.—Ordinance providing for issuance of bonds for erection and maintenance of garbage reduction plant has been amended to provide for \$20,000 issue, instead of \$10,000, as was first intended.

Newport, O.—Ordinance has been passed calling for election to vote on \$10,000 bond issue for erection of garbage crematory.

Springfield, O.—Ordinance is being considered providing for issuance of \$50,000 worth of bonds for building of lake at Snyder Park.

Scranton, Pa.—Ordinance for issuing of bonds not to exceed \$130,000 for purchase of park sites has been referred to Committee.

Chattanooga, Tenn.—Improvement of East Lake park is under consideration.

Dallas, Tex.—City Hospital to cost about \$100,000 will be located on Oaklawn and Maple Aves.

Spokane, Wash.—City Commissioners will likely advertise for bids for foundations and basements of city hall, without waiting for city hall bonds to carry.

Racine, Wis.—City Council has decided to locate proposed \$30,000 garbage plant on old Isolation hospital grounds, south of Racine College, nearly three miles from the center of city.

CONTRACTS AWARDED

New Britain, Conn.—By Board of Water Commissioners, for constructing gate house on top of foundation at high pressure reservoir on Hunter tract, to A. P. Leavitt.

Peoria, Ill.—For excavating and bringing to grades Hecox st., from Lincoln ave. to Ann st., to C. Stenstrom, at 37c. per cu. yd. for excavation.

Duluth, Minn.—For fill at Amity Creek, on East Duluth and Lester River rd., to Letour & Riley, at \$1,005.

Newark, N. J.—By Common Council Building Committee, for cells in Sixth Precinct Police Station, to Pauly Jail Building Co., at \$7,479.

Yonkers, N. Y.—By Board of Contract and Supply for construction of Municipal Tuberculosis Hospital buildings, to Lynch & Larkin, at \$37,889; other bids as follows: George T. Kelly, \$43,888; Robert L. Stewart, \$40,900; Kenneth Mackay, \$38,178.

Selby, S. D.—For erecting court house and jail, to Gray Construction Co., of Watertown, for \$50,002.

Buckley, Wash.—For erection of city hall to C. C. Whitmore, at \$5,000.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Massachusetts...	Boston.....	Oct. 16, 11:30 p.m....	Constr. macadam roadway in Drayton Ave.....	L. K. Rourke, Commissioner P. Wks. Common Council.
New Jersey....	Summit.....	Oct. 17, 3:30 p.m....	Constructing 1,690 lin. ft. of 4-ft. cement sidewalk.....	
New Jersey....	Camden.....	Oct. 17, 8 p.m....	Paving Lester St. with sheet asphalt on a 4-in. concrete foundation on one street and with 6-in. concrete founda. on another	Edward Francis, Chm. St. & H. Com.
Indiana.....	Fort Wayne....	Oct. 19, 7:30 p.m....	Paving 2 alleys.....	Frank T. Benoy, Chm. Bd. Pub. Wks.
Pennsylvania..	Swissvale.....	Oct. 21, 7 p.m....	Grading, paving and curbing Palmer Street.....	E. M. Watt, Supt. Pub. Wks.
Florida.....	Jacksonville....	Oct. 27, 10 a.m....	Grad. Pensacola Road and clear. grubbing: pav. 3 other streets.	Gail L. Barnard, Co. Engr., Bd. Com.
SEWERAGE				
New Jersey....	Camden.....	Oct. 17, 8 p.m....	Constructing sewer on Fillmore Street.....	Edward Francis, Chm. Hwy. Com.
WATER SUPPLY				
Michigan.....	Grand Rapids...	Oct. 12, 8 p.m....	Laying water mains in several streets.....	E. H. Christ, Pres. Bd. Pub. Wks.
Massachusetts...	Boston.....	Oct. 17, 11:30 a.m....	Laying 2,250 lin. ft. of 36-in. water pipe in Washington and Sanford Streets.....	L. K. Rourke, Comr. Pub. Wks.
Washington....	Wapato.....	Oct. 25, 8 p.m....	Drilling a 10-in. well and concrete pump pit.....	H. E. Trimble, Clk. Council.
LIGHTING AND POWER				
Ohio.....	Cleveland.....	Oct. 27, noon.....	Constructing addition to power house.....	Chas. E. Thorne, Dir. Wooster, Ohio.
MISCELLANEOUS				
Ohio.....	Cleveland.....	Oct. 20, noon.....	Furnishing and delivering 1,200 European Sycamores, 300 American Elms and 500 Norway Maples for Forestry Dept..	A. B. Lea, Dir. Pub. Service.

STREET IMPROVEMENTS

Gadsden, Ala.—County Commissioners of Etowah have made appropriation of \$2,000 to be used in constructing model highway under supervision of State Engineer. By doing this, County will receive another \$2,000 from State. Road to be improved under State supervision is one leading from this city to Glencoe.

Evansville, Ind.—Resolutions have been passed for improvements of Garvin, Mulberry and 7th Sts.

Franklin, Mass.—Article has been adopted authorizing Selectmen to build section of State highway on Central St.

Columbia, Mo.—G. H. Walker & Co., of St. Louis, have been successful bidders for bond issue of \$100,000 to be made by Columbia Special Road District, which will build 19 miles of rock roads converging at Columbia. Portion of Missouri State highway is included in road to be built.

Cranford, N. J.—Street Committee has been empowered to make repairs to Central Ave. macadam roadway.

Auburn, N. Y.—Common Council is con-

sidering proposition of extending Liberty St. northward to Lansing St.

Elizabeth City, N. C.—Purchase of street sprinkler and street sweeper has been ordered.

Cincinnati, O.—Ordinances are being considered providing for various street improvements.

Youngstown, O.—City Council will authorize \$10,000 bond issue for making street repairs.

Butler, Pa.—Ordinance has been introduced calling election Nov. 7 for voting on increasing indebtedness of borough for construction of elevated street from Wayne St. to Fairview and Center Aves.

East Providence, R. I.—Petitions are being considered asking for repairs to be made to Pawtucket and Orchard Aves.

Columbia, S. C.—City Council is considering petition for paving of East Gervais St. from Sumter and Harden.

Jonesboro, Tenn.—Washington County Court has voted to issue \$60,000 in bonds for construction of Washington County portion of Bristol-to-Memphis State highway.

Madisonville, Tenn.—Monroe County Court has voted \$150,000 for good roads.

Morgantown, W. Va.—City Council has authorized various street improvements.

CONTRACT AWARDED

Denver, Colo.—For improvement work in North Side District No. 12 by Board of Public Works, to Denver & Pueblo Construction Co., for \$29,334. Plans call for grading roadways and sidewalk areas, construction of concrete curb and gutters, and concrete sidewalks, in greater part of district comprising what was formerly Barnum. Other bidders: Clinton Construction Co., \$31,181; Municipal Construction Co., \$31,241; J. Fred Roberts, \$33,009, and Gaffy & Keefe Construction Co., \$34,869; also for paving 14,912 sq. yds. of W. 23d St. with asphalt macadam to Denver & Pueblo Construction Co., at \$21,771.

Norwalk, Conn.—For 29,000 sq. yds. paving to J. A. McElroy, of Norwalk, at \$2.34 per sq. yd. for paving Main and Water Sts. with Mack viti. block, and \$3.21 per sq. yd. for paving West Ave. with U. S. wood block. Other bidders: R. D. Daley, New Haven,

16,000 sq. yds. Mack block, \$2.75 per sq. yd.; U. S. wood block, \$3.50; W. H. Arthur, Stamford, 16,000 sq. yds. Mack block, \$2.53; W. L. Doolan, Boston, Mass., 16,000 sq. yds. Mack block, \$2.64; Field, Baker & Underwood, Philadelphia, Pa., 16,000 sq. yds. Mack block, \$2.62; Barber wood block, \$3.20; Franklin Cont. Co., of New York, bid on Mack block, \$2.71; Metropolitan Mfg. Co., Metropolitan vit. block, \$2.91; J. F. Doherty & Bro., of Bridgeport, Mack block, \$2.75½; Warren Bros. Co., Boston, bitulithic, \$2.38 and \$2.48, according to quantity; B. D. Pierce, Jr., Co., Bridgeport, asphalt concrete, \$2.03 and \$2.07, according to quantity; So. N. E. Paving Co., Hartford, asphalt concrete \$2.14.

Evansville, Ind.—By Board of Public Works, for improvement of Governor St., from Jefferson Ave. to Monroe Ave., to Western Construction Co.; and for improvement of alley between 3d and 4th Sts., from Walnut to Chestnut to Bedford and Nugent.

Indianapolis, Ind.—By city, for improving Talbott Ave., from 28th to 30th St., to Union Asphalt Construction Co., at \$2.35 per lin. ft. Other bids as follows: Baebler Asphalt Co., \$2.39; Hoosier Construction Co., \$4.38.

Vincennes, Ind.—By County Commissioners, for construction of 2 gravel roads, to C. F. Wolf, at \$971.90, and to H. F. Jones, at \$2,500.

Cranford, N. J.—By city, for construction of sidewalks in Cranford Ave., to L. Masso.

Rochester, N. Y.—For construction of brick pavement on Field St., to F. V. Brotsch, at \$4.969.

Rochester, N. Y.—For construction of walks on Mt. Hope Ave., to Henry Schoenfeldt, at \$1,071.25, and for walks and grading on Garnet St., at \$394.50.

Alken, S. C.—By City Council, for paving Main St., to W. H. Hite, at \$13,500.

Houston, Tex.—For grading 8.2 miles of boulevards and streets and constructing and terracing 4.4 miles of parks and plazas by Greater Houston Suburban Corporation to Vernon C. Ford & T. H. Collins.

Edgewood, W. Va.—By Council, for paving 500 yds. of Edgington Lane, to Stringer & Springer.

Pleasant Valley, W. Va.—For placing concrete curbing along number of streets, to Contractor John Emmert, of Edgewood.

SEWERAGE

Denver, Colo.—Plans are being drawn for storm sewer to drain considerable portion of East Denver, comprising section of Montclair north to 6th Ave., Park Hill, Park Hill Heights, region about Jewish Hospital and south of City Park, and section north of park as far as 39th Ave.

Jacksonville, Fla.—Citizens have voted in favor of \$195,000 bonds for extension of sewer system.

Weiser, Idaho.—City Council has ordered plans prepared for system of sewers, approximately 12 miles in length.

Silvis, Ill.—Resolution has been passed recommending expenditure of \$2,700 for extension of sewer system of village.

Lowell, Mass.—City Council has voted for lowering and enlarging of Lawrence St. sewer.

Bloomfield, N. J.—Plans have been completed by Sewer Committee for installing storm drain through Berkeley, Fontaine and Watsessing Aves., at cost of \$9,000.

Pleasant Ridge, O.—Bids will be received until 12 Noon, Oct. 23, at office of Clerk of Village for purchase of bonds to amount of \$15,000 for purpose of paying village portion of cost of constructing sewers. H. B. Hayden, Clerk.

Duquesne, Pa.—Council has selected Leo Hudson as Consulting Engineer to prepare plans for installation of sewerage system.

CONTRACT AWARDED

Oakland, Cal.—By City Council, for construction of sewer in Webster St., to Ransome-Crummey Co., as follows: Furnishing and laying 24-in. pipe, at \$3.35 per lin. ft.; furnishing and laying 18-in. pipe, at \$2.45 per lin. ft.; furnishing and laying 16-in. pipe, at \$1.94 per lin. ft.; furnishing and laying 14-in. pipe, at \$1.65 per lin. ft.; furnishing and laying 6x16-in. "Y" branches, at \$1 each extra; furnishing and laying 6x24-in. "Y" branches, at \$2.50 each extra; furnishing and laying 6x18-in. "Y" branches, at \$1.50 each extra; furnishing and laying 6x16-in. "Y" branches, at \$1.25 each extra; Constructing brick manholes, with covers, complete, \$98 each.

Oakland, Cal.—By City Council, for sewer to be constructed along 30th St. as follows: Furnishing and laying 8-in. pipe, at 95 cts. per lin. ft.; furnishing and laying 8-in. "Y" branches, at 80 cts. each extra; constructing brick manholes, with covers, complete, \$45 each; constructing lamphole, with cover, \$12, to W. S. Farley.

Oneida, N. Y.—By Board of Public Works, for construction of sewer in E. Walnut St., to Carnevale Bros.

Glen Grove, W. Va.—By city, for placing sewer system along Sycamore St. and through Nichol's addition, to J. L. Sligar & Sons Co., of Paterson.

WATER SUPPLY

Weiser, Idaho.—City Council has authorized extension of water works, to include about 7 miles of mains.

Morton Grove, Ill.—Plans are being prepared for water work system.

Peoria, Ill.—Trustees of Village have voted to call special election to vote on water works bond issue on Nov. 7.

Perth Amboy, N. J.—Board of Water Commissioners is considering installation of meters.

Hubbard, O.—Council has voted to issue \$30,000 bonds for construction of water works.

CONTRACT AWARDED

Melvin, Ill.—For constructing water works, to Chicago Bridge & Iron Works., of Chicago, for \$3,900; the Melvin Cement Co., of Melvin, secured contract for building at \$1,930.

Lost Nation, Ia.—For construction of water works, to the National Co., South Bend, Ind., \$8,759; other bids as follows: Cook Construction Co., Des Moines, Iowa, \$9,835; Des Moines Bridge & Iron Co., Des Moines, \$9,999; C. W. Roland Co., Des Moines, Iowa, \$10,500; Thos. Carey & Son, Clinton, Iowa, \$10,695.

Lawrence, Mass.—By City for furnishing new unit and condenser pump, to Lawrence Machine Co., at \$4,038.

Toledo, O.—For construction of filtered reservoir to Beer-Ofutt Construction Co. of Fort Wayne, Ind., at \$125,000.

New Lisbon, Wis.—To Central Construction Co., of Oshkosh, for proposed city electric light plant and water works. Water works will include 75,000-gal. steel tank at elevation of 120 ft. from bottom.

Sun Prairie, Wis.—For steel water tank to Kennicott Water Softener Co., Chicago Heights, Ill., for \$2,550.

BRIDGES

Richmond, Ind.—Comrs. of Wayne County will construct bridge over Whitewater River 700 ft. long, which will cost about \$75,000.

Seattle, Wash.—Ordinance will be introduced in City Council directing Board of Public Works to prepare plans for and proceed with construction of viaduct on Westlake Ave. north.

MISCELLANEOUS

Jonesboro, Tenn.—County Court of Washington County is considering favorably erection of modern court house, to cost about \$50,000.

Orange, Tex.—The navigation bond issue of \$1,243,000 for completion of 25-ft. channel from Orange to Gulf of Mexico has been sold to Litcher & Moore Lumber Co.

Petersburg, Va.—Common Council is considering \$175,000 bond issue for public improvements.

Portsmouth, Va.—City has decided to erect municipal building at 409 Court St.

Richmond, Va.—Common Council has appropriated \$25,000 for erection of timber wharf on city property on James River.

CONTRACTS AWARDED

Topeka, Kan.—By City Commissioners, for construction of detention hospital, to Bowers & Kearns, at \$10,648.

Seattle, Wash.—For fire brick and fire clay to be used in construction of Garbage Destructor No. 2, to Laclede-Christy Clay Products Co., of St. Louis.

Burlington, Wis.—For work on Turtle Creek Drainage Canal, to Yader & Swartz, at \$17,844.20.

Burlington, Wis.—For work on Hoosier Creek Drainage Canal as follows: For tilting, to National Drain & Tile Co., at \$8,000, and for dredging, to Mr. Whalen, of So. Milwaukee, at 9 cts. per cu. yd.

Wanted Position

A competent and experienced Water Works Superintendent, qualified to build up revenue and operate plumbing shop. References.

FRED BOSCH, Whitewater, Wis.

PROPOSALS

TRIPLE COMBINATION AUTOMOBILE CHEMICAL FIRE ENGINE AND HOSE WAGON.

Albuquerque, N. M.

Sealed bids will be received at my office at Albuquerque, New Mexico, until Monday, Nov. 6, 1911, at 8 P. M., for a triple combination Automobile Chemical Fire Engine and Hose Wagon. Engine must be of not less than 90 horsepower, six-cylinder, with capacity for carrying at least 1200 feet of 2½-in. hose, double steel body for carrying two separate lines of hose; equipped with chemical tank of at least 35 gallons capacity, with 200 feet of ¾-inch chemical hose attached, couplings to conform with pitch of thread now carried. And with a water-pumping capacity of not less than 700 gallons per minute. Rear wheels to be equipped with 4½ in. pneumatic dual tires. Same shall include all necessary equipment, such as tools, lamps, both portable and stationary; locomotive bell and horn, axes, ladders, to be of the regulation length and design; crowbar, door opener, nozzles, and it shall be of the self-cranking device.

Full specifications with lowest price should be placed in a sealed envelope marked "Proposals for Furnishing Motor-driven Fire Engine for the City of Albuquerque, New Mexico," and forwarded to the City Clerk of Albuquerque, New Mexico.

A certified check for the amount of \$500.00 is to accompany each and every bid.

No bid will be accepted nor proposals considered except as above stated.

The city reserves the right to reject any and all bids.

By order of City Council.

Dated October 2, 1911.

JOHN B. McMANUS,
City Clerk.

NOTICE.—LIGHT-MAKING COMPANIES

Champaign, Ill.

The city of Champaign, Illinois, with a population of over 15,000, is in darkness.

154 Arc (Street) lights are shut down.

Propositions or Bids for Lighting the Streets of this City, for the period of ten (10) years with electricity, gas or gasoline are herewith solicited.

All Propositions or Bids must be presented to the Council of said City of Champaign, Illinois, on or before November 4, 1911.

The aforesaid City Council of Champaign reserves the right to reject any or all propositions or bids, or accept any bid or proposition, or any part of any bid or proposition.

WM. COUGHLIN, Mayor.

Nat. M. Woodward, City Clerk.
(15-16)

TRANSITS and LEVELS

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K. & E. Wye Level 18"..... 60.00
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